Incident Command System for Structural Collapse Incidents

ICSSCI-Student Manual

4th Edition, 4th Printing-December 2015

FEMA

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U.S. DEPARTMENT OF HOMELAND SECURITY

UNITED STATES FIRE ADMINISTRATION

NATIONAL FIRE ACADEMY

FOREWORD

The U.S. Fire Administration (USFA), an important component of the Department of Homeland Security (DHS), serves the leadership of this Nation as the DHS's fire protection and emergency response expert. The USFA is located at the National Emergency Training Center (NETC) in Emmitsburg, Maryland, and includes the National Fire Academy (NFA), National Fire Data Center (NFDC), and the National Fire Programs (NFP). The USFA also provides oversight and management of the Noble Training Center in Anniston, Alabama. The mission of the USFA is to save lives and reduce economic losses due to fire and related emergencies through training, research, data collection and analysis, public education, and coordination with other Federal agencies and fire protection and emergency service personnel.

The USFA's National Fire Academy offers a diverse course delivery system, combining resident courses, off-campus deliveries in cooperation with State training organizations, weekend instruction, and online courses. The USFA maintains a blended learning approach to its course selections and course development. Resident courses are delivered at both the Emmitsburg campus and the Noble facility. Off-campus courses are delivered in cooperation with State and local fire training organizations to ensure this Nation's firefighters are prepared for the hazards they face.

Incident Command System for Structural Collapse Incidents (ICSSCI) is designed to provide fire command officers with an understanding of Command operations at structural collapse incidents.

ACKNOWLEDGMENTS

The dedication, cooperation, and assistance of many professionals have made this course possible. The National Fire Academy wishes to thank the following people and organizations for their role in the revision of this course.

DEVELOPMENT GROUP

Mr. Terry Clements, Asst. Fire Chief (Retired)
Clearwater Fire Department
Clearwater, FL
Consultant

Mr. Robert Dubé, Chief
Louisa County, VA
Fire & EMS, Consultant

Mr. Robert J Bennett, Training Specialist
National Fire Academy, Emmitsburg, MD

Ms. Stacey Harmon, Instructional Systems Specialist
National Fire Academy, Emmitsburg, MD

Anthony Cantor, Division Manager-Training and Education
ViewPointe Solutions, LLC

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FIREFIGHTER CODE OF ETHICS

Background

The Fire Service is a noble calling, one which is founded on mutual respect and trust between firefighters and the citizens they serve. To ensure the continuing integrity of the Fire Service, the highest standards of ethical conduct must be maintained at all times.

Developed in response to the publication of the Fire Service Reputation Management White Paper, the purpose of this National Firefighter Code of Ethics is to establish criteria that encourages fire service personnel to promote a culture of ethical integrity and high standards of professionalism in our field. The broad scope of this recommended Code of Ethics is intended to mitigate and negate situations that may result in embarrassment and waning of public support for what has historically been a highly respected profession.

Ethics comes from the Greek word ethos, meaning character. Character is not necessarily defined by how a person behaves when conditions are optimal and life is good. It is easy to take the high road when the path is paved and obstacles are few or non-existent. Character is also defined by decisions made under pressure, when no one is looking, when the road contains land mines, and the way is obscured. As members of the Fire Service, we share a responsibility to project an ethical character of professionalism, integrity, compassion, loyalty and honesty in all that we do, all of the time.

We need to accept this ethics challenge and be truly willing to maintain a culture that is consistent with the expectations outlined in this document. By doing so, we can create a legacy that validates and sustains the distinguished Fire Service institution, and at the same time ensure that we leave the Fire Service in better condition than when we arrived.

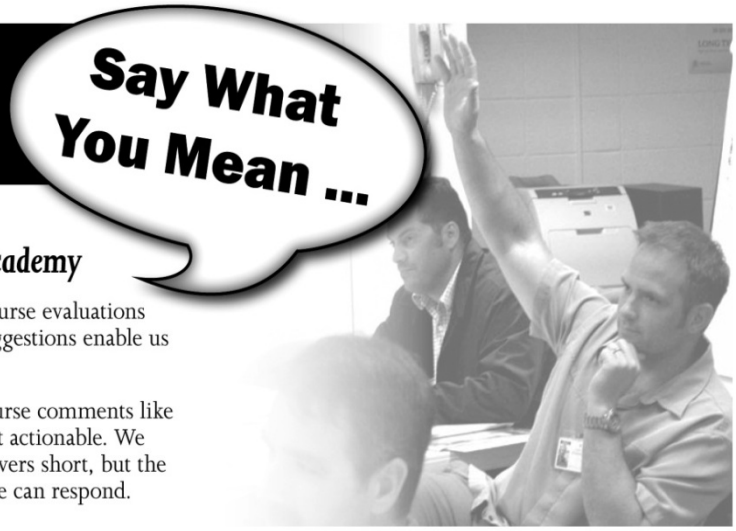
FIREFIGHTER CODE OF ETHICS

I understand that I have the responsibility to conduct myself in a manner that reflects proper ethical behavior and integrity. In so doing, I will help foster a continuing positive public perception of the fire service. Therefore, I pledge the following…

- Always conduct myself, on and off duty, in a manner that reflects positively on myself, my department and the fire service in general.
- Accept responsibility for my actions and for the consequences of my actions.
- Support the concept of fairness and the value of diverse thoughts and opinions.
- Avoid situations that would adversely affect the credibility or public perception of the fire service profession.
- Be truthful and honest at all times and report instances of cheating or other dishonest acts that compromise the integrity of the fire service.
- Conduct my personal affairs in a manner that does not improperly influence the performance of my duties, or bring discredit to my organization.
- Be respectful and conscious of each member's safety and welfare.
- Recognize that I serve in a position of public trust that requires stewardship in the honest and efficient use of publicly owned resources, including uniforms, facilities, vehicles and equipment and that these are protected from misuse and theft.
- Exercise professionalism, competence, respect and loyalty in the performance of my duties and use information, confidential or otherwise, gained by virtue of my position, only to benefit those I am entrusted to serve.
- Avoid financial investments, outside employment, outside business interests or activities that conflict with or are enhanced by my official position or have the potential to create the perception of impropriety.
- Never propose or accept personal rewards, special privileges, benefits, advancement, honors or gifts that may create a conflict of interest, or the appearance thereof.
- Never engage in activities involving alcohol or other substance use or abuse that can impair my mental state or the performance of my duties and compromise safety.
- Never discriminate on the basis of race, religion, color, creed, age, marital status, national origin, ancestry, gender, sexual preference, medical condition or handicap.
- Never harass, intimidate or threaten fellow members of the service or the public and stop or report the actions of other firefighters who engage in such behaviors.
- Responsibly use social networking, electronic communications, or other media technology opportunities in a manner that does not discredit, dishonor or embarrass my organization, the fire service and the public. I also understand that failure to resolve or report inappropriate use of this media equates to condoning this behavior.

Developed by the National Society of Executive Fire Officers

A Student Guide to End-of-course Evaluations



Ten Things You Can Do to Improve the National Fire Academy

The National Fire Academy takes its course evaluations very seriously. Your comments and suggestions enable us to improve your learning experience.

Unfortunately, we often get end-of-course comments like these that are vague and, therefore, not actionable. We know you are trying to keep your answers short, but the more specific you can be, the better we can respond.

Actual quotes from student evaluations:	Examples of specific, actionable comments that would help us improve the course:
1 "Update the materials."	• The (ABC) fire video is out-of-date because of the dangerous tactics it demonstrates. The available (XYZ) video shows current practices. • The student manual references building codes that are 12 years old.
2 "We want an advanced class in (fill in the blank)."	• We would like a class that enables us to calculate energy transfer rates resulting from exposure fires. • We would like a class that provides one-on-one workplace harassment counseling practice exercises.
3 "More activities."	• An activity where students can physically measure the area of sprinkler coverage would improve understanding of the concept. • Not all students were able to fill all ICS positions in the exercises. Add more exercises so all students can participate.
4 "A longer course."	• The class should be increased by one hour per day to enable all students to participate in exercises. • The class should be increased by two days so that all group presentations can be peer evaluated and have written abstracts.
5 "Readable plans."	• The plans should be enlarged to 11 by 17 and provided with an accurate scale. • My plan set was blurry, which caused the dotted lines to be interpreted as solid lines.
6 "Better student guide organization," "manual did not coincide with slides."	• The slide sequence in Unit 4 did not align with the content in the student manual from slides 4-16 through 4-21. • The instructor added slides in Unit 4 that were not in my student manual.
7 "Dry in spots."	• The instructor/activity should have used student group activities rather than lecture to explain Maslow's Hierarchy. • Create a pre-course reading on symbiotic personal relationships rather than trying to lecture on them in class.
8 "More visual aids."	• The text description of V-patterns did not provide three-dimensional views. More photographs or drawings would help me imagine the pattern. • There was a video clip on NBC News (date) that summarized the topic very well.
9 "Re-evaluate pre-course assignments."	• The pre-course assignments were not discussed or referenced in class. Either connect them to the course content or delete them. • The pre-course assignments on ICS could be reduced to a one-page job aid rather than a 25-page reading.
10 "A better understanding of NIMS."	• The instructor did not explain the connection between NIMS and ICS. • The student manual needs an illustrated guide to NIMS.

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UNIT 1: INTRODUCTION

TERMINAL OBJECTIVE

The students will be able to describe key aspects of a structural collapse.

ENABLING OBJECTIVES

The students will:

1. *Identify hazards and conditions associated with a structural collapse.*
2. *Understand the causes and complexities of structural collapses.*
3. *Describe the difference between response and recovery operations.*

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COURSE OVERVIEW

Course Goal

The goal of this course is to provide fire officers with an understanding of Command operations at structural collapse incidents.

Why Do I Need a Course on Structural Collapse?

As fire officers, it is important for you to gain a basic knowledge of factors involved in incidents of this type. It is possible for all of us to be involved in such an incident during our careers. This course should leave you with an appreciation for incident complexity and with the knowledge that successful conclusion of incidents of this type depends on strong Command skills and effective incident management.

Instructional Units

During the next 2 days, we will cover the following instructional units:

- Unit 1: Introduction.
- Unit 2: The Incident Command System Organizational Structure.
- Unit 3: Response Resource Capabilities.
- Unit 4: Scene Management: Factors and Issues.
- Unit 5: Response Functions.
- Unit 6: Structural Collapse: Operational Phases.

OVERVIEW OF STRUCTURAL COLLAPSE

Causes and Complexities of Structural Collapse

Structures collapse from a variety of causes. Over 500 major collapses occur in the United States each year. Collapses can occur due to a manmade or a natural event, which can include the following.

Construction Accidents

These may result from design problems, overloading, or poor construction. They may occur during construction or after construction has been completed, when the structure is occupied or in use.

Structural Deterioration

As structures age, structural weaknesses develop from building material failure, settling, or other factors. A minor causative event may result in collapse.

Fire or Explosion

Fire commonly causes structural collapse by destroying building materials and weakening support elements. Explosions cause rapid collapse due to blast forces on the structure. Explosions can be caused by natural events or acts of terrorism.

Natural Hazards (e.g., Earthquakes, Hurricanes, Tornadoes, Floods, and Landslides)

Structures react differently to stresses caused by earth movement, water, or wind forces, thus creating different rescue problems and strategies. These events may cause widespread damage, with multiple-site rescues and large numbers of victims.

Transportation Accidents

Vehicles, trains, ships, and aircraft may crash into structures. When structures collapse in these incidents, the complexity of the response increases.

Specific Causes and Factors

Natural Disasters

Earthquakes, hurricanes, tornadoes, floods, mudslides, high winds, snow, heavy rainfall, tsunami, ocean waves, ground subsidence, and landslides may result in major damage to structures, numerous victims and hazards, and damage to the infrastructure over a large geographic area.

Wall Failure

Supporting walls can collapse from foundation failure, deterioration, and vertical and horizontal stresses. These collapses most commonly create lean-to void spaces.

Overloaded Floors

The most common causes of failure from heavy loading are heavy machinery and equipment. Additional loads tremendously stress the beams, and even a slight impact load applied to the floor may cause beam failure. Victims may be found in V-shaped or lean-to void spaces, or pinned under stock and debris.

Overloaded Roofs

Possible causes of collapse include excessive weight, such as air-handling units, large signs, heavy snow or rain, and improper or blocked drainage ducts. Roof failure may cause partial or entire roof pancake collapse and wall collapse.

Column or Arch Failure

If a column supporting a beam joint fails or an arch fails, collapse will occur, sometimes with little warning. These collapses generally create V-shaped void spaces.

Structural Weakness

This problem is one of the most difficult to detect because the majority of the structural elements vital to a building's stability may be hidden from view by interior or exterior coverings, such as plaster and siding materials. Exposure to weather, shaking from earthquakes or constant vibration, and neglect cause structures to deteriorate rapidly. Collapses in already-weakened structures may result in a variety of conditions and voids.

Improper Alterations

This is a common cause of structural collapse in the urban environment. These alterations may result in the removal of vital supporting materials or the addition and installation of inadequate and nonengineered structural materials, thereby changing and weakening structural strength and stability.

Fire-Weakened Structural Members

This is a common cause of structural collapse during or after a fire. Buildings that have suffered previous fire damage and have not been repaired face collapse hazards from other factors, such as high winds, shaking forces, heavy rain, etc.

Explosions

Explosions may be caused accidentally by such things as leaking natural or propane gas, or by explosive devices. Explosions may cause the collapse and demolition of the entire building, with damage to surrounding structures. The force of the blast subjects the structural members to extreme stresses and may cause extensive amounts of debris and demolished construction materials to be blown throughout the inside of the structure and into the surrounding outside area. The number of survivable void spaces may be limited and victims may be found anywhere in the debris. Injuries related to explosions are generally severe.

Collision Impact

Structural collapse may be caused by collision from various types of transportation vehicles or heavy equipment. Generally, the collapse area is localized, but may be complex due to the victim locations in the vehicle, victims in the structure, and the potential for spillage of fuel and cargo.

Progressive Collapse

Progressive collapses are a chain reaction caused by the collapse of one structure or part of a structure onto another structure. Walls, floors, or entire buildings may collapse progressively in domino fashion.

Examples of Structural Collapse

The following examples of major incidents occurred from the 1980s through the present. Many of these incidents focused national attention on our capability to manage and perform search-and-rescue operations at structural collapse incidents. That focus has resulted in improvements in construction techniques and response capability.

Harbor Cay Condominium Collapse (Cocoa Beach, Florida, 1981)

This building was under construction at the time of collapse. Heavy floor and wall construction consisted of precast reinforced concrete slabs and cast-in-place concrete components. All five floors and the roof of the condominium collapsed in a pancake configuration, trapping a large

number of construction workers. Eleven were killed and 23 injured. The incident involved more than 60 hours of continuous rescue operations and resources from five county fire districts; 16 municipal fire departments; and a response of Civil Defense, military, and private-sector technical specialists.

Hyatt Regency Sky Walk Collapse (Kansas City, Missouri, 1981)

During a large social event at the hotel, two suspended walkways overloaded with people collapsed from 50 feet above the atrium, leaving 113 people dead and 186 injured. The suspended walkways, constructed of structural steel and lightweight concrete, spanned 120 feet across the atrium space, above hundreds of people on the floor below. The high number of dead and injured, the location of the collapse, the size of the collapsed material, and the ineffectiveness of the typical emergency service tools created severe rescue limitations. The incident required a large number of medical personnel working alongside the rescuers. Twenty-nine live victims were removed from under the debris during the rescue operations. Heavy rigging and construction specialists and heavy equipment were needed to remove the debris during the rescue operations.

Mexico City Earthquake (Mexico City, Mexico, 1985)

The devastating Mexico City earthquake caused the collapse of more than 264 major structures (many were 10 to 18 stories tall) and widespread damage and partial collapse of more than 7,000 smaller structures. The quake also had a major impact on the city's infrastructure, causing many problems for the responders as well as the victims. It is estimated that more than 20,000 of the 18 million residents of the city were killed, 30,000 injured, and more than 300,000 left homeless. This incident clearly focused the attention of the world on the problem of collapsed structure search and rescue and major incident management. It also brought to light the high degree of risk and danger associated with collapse rescue operations, inasmuch as more than 100 rescue personnel died during rescue operations (the majority were killed in a major aftershock that caused additional collapses).

Murrah Federal Building Bombing (Oklahoma City, Oklahoma, 1995)

This act of terrorism killed 168 people, injured more than 600, and destroyed a nine-story, multitenant Federal office building in downtown Oklahoma City. Additionally, it severely damaged dozens of other building in close proximity. This was the first large-scale deployment of the Federal Urban Search and Rescue (US&R) system in the aftermath of a terrorist attack.

September 11, 2011, Terrorist Attacks on the Pentagon and the World Trade Center

These events killed over 3,000 people and injured over 6,000. The subsequent collapse of World Trade Center (WTC) Towers 1 and 2 killed 343 firefighters and 75 police officers--the single largest loss of life in the history of the fire service. The response to these events brought all 28 of the Federal US&R teams to assist, as well as numerous State and local collapse rescue-response teams. The recovery operation for the WTC lasted for 8 months. The response to the attack on the Pentagon resulted in one of the largest shoring operations ever performed.

Numerous other incidents involving structural collapse occurred during the 1980s. They challenged and expanded the concepts of US&R operations and incident management. Among these incidents are the following:

- Hurricane Alicia, Texas, 1982;
- Propane explosion and collapse, Buffalo, NY, 1983;
- Coalinga earthquake, Coalinga, CA, 1983;
- L'Ambiance Plaza collapse, Bridgeport, CT, 1987;
- Whittier Narrows earthquake, Los Angeles area, 1987;
- Department store collapse, Brownsville, TX, 1988;
- Armenian earthquake, Soviet Armenia, U.S.S.R., 1988;
- Building collapse, West 31st Street, New York City, 1988;
- Loma Prieta earthquake, San Francisco Bay area, 1989;
- Hurricane Hugo, East Coast United States, 1989; and
- San Bernardino train derailment and structural collapse, California, 1989.

The 1990s and 2000s have been decades of continuous challenges in structural collapse rescue and emergency management. They have also been the decades that saw the most advances in these operations, with improved tools and equipment, search-and-rescue techniques, safety requirements, training, additional resource capabilities and coordinated response, and the expanded use of the Incident Command System (ICS). Some examples of significant incidents are the following:

- Explosion and collapse of the Crested Butte State Bank, Colorado, 1990;
- Hurricane Andrew, Southeast Florida, 1992;
- Explosion, World Trade Center, New York City, 1993;
- Northridge earthquake, Los Angeles area, 1994;
- Explosion, Murrah Federal Building, Oklahoma City, OK, 1995;
- Kobe earthquake, Kobe, Japan, 1995;
- Explosion, Humberto Vidal Building, Puerto Rico, 1996;
- Tornadoes, Southeast Michigan, 1997;
- Tornadoes, Atlanta, GA, 1998;
- Earthquakes, Izmit and Douje, Turkey, 1999;
- Bombing, U.S. Embassy, Nairobi, Kenya, 1999;
- Earthquake, Taiwan, 1999;

- Terrorist attacks, World Trade Center and Pentagon, 2001;
- Earthquake, Bam, Iran, 2003;
- Hurricane Katrina, Gulf Coast of United States, 2005; and
- Earthquake, Haiti, 2009.

Structural collapse incidents should be considered high-risk, low-frequency events. The rescue of trapped victims may be both complex and dangerous, involving the response of various levels of capability in a time-critical situation to locate and remove trapped or injured victims safely from the collapsed structure.

Hazards

Structural collapse creates many hazardous conditions for the rescuers, who may suffer injury, illness, psychological problems, or even death. A hazard is anything presenting a risk or danger to the rescue effort. The best methods to reduce the risks of injuries or illness during the rescue operation are prevention and avoidance. Rescue personnel can reduce the threats inherent in rescue operations through knowledge and awareness of potential hazards.

Types of threats that may be encountered by the responder are discussed below.

Physical

Two common threats that can be encountered are atmospheric contamination and changes in temperature that affect bodily functions.

Atmospheric contamination may involve a toxic or flammable condition, or a reduced level of oxygen, sometimes found in confined spaces. The proper safety equipment, air monitoring devices, and operational procedures are necessary in these environments.

The human body functions efficiently within a narrow temperature range. During rescue operations, responders may be exposed to cold or heat over a prolonged time, or may experience a rapid increase or decrease in temperature that affects normal bodily functions.

In many rescue operations, **dehydration** is a problem that affects both victims and rescuers. An environment does not have to be dry for dehydration to occur. Adequate fluid intake prevents dehydration.

Adequate nutrition may be a problem in long-term rescues. Food is fuel for body functioning and inadequate nutritional intake can impair performance. Physical exertion and the stress of rescue operations require high-energy output. A high-energy output with a lack of readily available energy may result in a weakened physical status, reduced coordination, irritability, or increased susceptibility to hypothermia.

Overeating can reduce both physical and mental performance because the blood required for the digestive process is not available for other bodily activities. Adequate nutrition can be provided through a supply of high-energy foods and the consumption of small meals on a periodic basis.

Good **physical conditioning**, providing both strength and stamina, is important for the rescuer because it allows prolonged exertion and the peaks of power needed to perform rescue activities. Emergency responders should participate in regular exercise programs that promote conditioning.

Medical

Medical threats may include **preexisting conditions** such as heart disease, lung disease, or diabetes, and certainly pose a serious threat to the rescuer and to the rescue operation. Responders with known preexisting medical problems should not participate in rescue operations.

Short-term medical problems such as headaches and stomach disorders or minor cuts and scrapes may be more of an annoyance than an emergency, but could become debilitating and, if not treated, may take the responder out of action. Short-term medical problems should be taken care of before they become debilitating. In any case, we do not want the rescuers to become part of the problem. They are part of the solution and must be able to perform at their highest capacity.

Environmental

Extreme working environments caused by cold, wet, or hot weather affect the human body and can cause hypothermia or heat exhaustion. Confined spaces or enclosed areas may also cause similar problems. Body core temperature differences of only a few degrees cause bodily malfunctions in such areas as thinking, judgment, and coordination. As the temperature moves away from the normal range, dysfunction increases, and unconsciousness or even death may result.

Hyperthermia is caused by exposure to heat. Increased body temperature may result in heat exhaustion or heat stroke, which may be fatal if not treated.

Hypothermia is caused by exposure to cold and results in the lowering of the body core temperature. The body's neurological and psychological systems are affected, causing impaired mental functions, loss of coordination, unconsciousness, and, if the process continues, death.

Exposure to chilling winds or water may cause **frostbite**, which, if prolonged, freezes and destroys body tissue. Susceptible areas are feet, hands, ears, and nose.

The danger of **hazardous materials** released in a structural collapse should be considered a factor at nearly every incident. The type of occupancy is a factor in assessing this risk, as is the availability of monitoring equipment. Product identification is critical in determining the methods used to respond to and mitigate the problem.

Biohazards from body fluids are a hazard to rescuers working around injured or deceased victims. Suitable precautions should be taken to protect the rescuer.

External

External threats include those caused by terrain, unstable surfaces, electrical shock, falling objects, and the risk of falling.

Terrain may present major obstacles to search-and-rescue operations, such as distance to site, access, obstacles, and hazards. These factors may increase time to reach the rescue site and result in extreme physical exertion for rescuers.

Collapsed structures may present the **risk of falling**, which could result in injury or death. Working in elevated situations may require the use of barrier lines to prevent access to dangerous edges, the use of safety lines to belay persons at risk of falling, the wearing of safety equipment, and the designation of a Safety Officer (SO).

Any surface that must be negotiated, and where there is the potential for a fall or loss of control, is an **unstable surface**. Unstable surfaces may not have the strength to support weight--i.e., the pound-force per square inch (psi) of the supporting surface is less than the psi of the weight of the rescuer(s). Any questionable or untested surface must be considered hazardous. These areas must be identified and either avoided or made safe. Unstable surfaces may also be caused by the presence of slippery materials such as water or oil on a concrete or metal surface. These problems may be mitigated by identification, use of safety equipment, avoidance of the area, reduction of exposure in the area, or removal of the hazard.

Electrical shock may be caused by **electrical current** in wires or equipment. Collapsed structures or standalone electrical hazards should be deenergized or avoided by establishing a danger zone around the hazard.

Lightning may be a threat to rescuers in certain areas. Develop a safety plan to include criteria for suspension of rescue operations, avoiding metal surfaces, projections, and conductive surfaces.

Falling Objects

Areas where rescuers are most likely to encounter falling objects, such as around an unstable collapsed structure, should be designated a collapse hazard or fall zone. Personnel should be observant and wear safety equipment. An SO and assistants may be used to warn of danger or to assist in mitigating the hazard of potential falling objects by securing or removing them. Signals and escape routes should be understood by all persons working in the hazard area.

Avalanches and Landslides

Avalanches or landslides may cause or threaten to cause structures to collapse, thereby placing rescuers in potentially dangerous situations on the lower side of the slope. Information, communication, and emergency plans are critical for this type of rescue.

Psychological

Psychological impacts from the rescue operations may include stress or anxiety from the fear of heights (acrophobia) or of enclosed places (claustrophobia). We need to recognize the signs and symptoms, communicate our concerns, and obtain professional guidance.

Stress during rescue operations and after (delayed stress) may have many causes, and those with stress may exhibit many symptoms, such as irritability, chronic fatigue, difficulty sleeping, changes in social behavior, etc. It is important for agencies to have a Critical Incident Stress Management (CISM) program in place prior to an incident.

SAFETY CONSIDERATIONS

Structural collapse results in many unsafe conditions for the rescuer and victim. Possible safety issues include

- unstable rescue areas (creating the possibility of secondary collapse);
- confined spaces;
- flammable or toxic hazards;
- oxygen-deficient atmospheres;
- ignition sources; and
- sharp, irregular, or unstable surfaces.

Safety considerations are a high priority in the response and management of a structural collapse incident. The following five issues always should be considered if you are involved in such an incident.

1. Safety starts with preplanning and training.

   Understanding the causes and hazards of collapsed structures provides the knowledge needed to develop standard operating guidelines (SOGs) and training programs for the rescuers. An integral part of this preparedness phase is safety. Identify equipment requirements that provide the level of safety needed for the rescuers in various types of potentially hazardous environments.

2. Use the ICS.

   The ICS provides an effective, all-hazard incident management tool that incorporates safety into the organization; from the responsibility of the Incident Commander (IC), to the SO, to all personnel in the incident organization. Responsibility and accountability are major components of the ICS.

3. Provide an SO, a safety plan, and a Rapid Intervention Crew (RIC) or company.

   Risks must be reduced and managed through a variety of methods, including the establishment of safety plans which may be a written part of the Incident Action Plan (IAP); the designation, where needed, of an SO and assistants who have direct responsibility and authority for scene safety; and the deployment of an RIC to be on immediate response standby at the incident for contingencies involving the rescue of response personnel.

4. Use a personnel accountability system.

   The location of response personnel during search-and-rescue operations is critical to their safety. It becomes the individual's responsibility to make sure that supervisors are aware of his/her location and the supervisor's responsibility to know where subordinates are at any given time. Good discipline, training, communications, and an adequate accountability system are essential to the safety of the rescuer in these hazardous environments.

5. Require protective clothing and equipment.

   The level of protection must be determined for the hazard before rescuers enter the hazard zone.

6. Establish medical unit and responder rehabilitation.

   Protection and care for the emergency responders should begin as soon as possible and continue throughout the event.

7. Consider using field observers.

   Consider the use of field observers to monitor the overall operations and physical status of the rescuers.

RESPONSE VERSUS RECOVERY OPERATIONS

Many times, structural collapse incidents leave survivors as well as deceased victims. The priority of efforts should be directed toward the safe location and removal of the live victims. Some incidents result in the deaths of all those in or around the structure. Survivability factors change our priorities and the margin of the risks we take versus the benefits of the resultant rescues.

Response Operations

Response operations involve the search for, and rescue of, live victims. Many times, the rescue operation involves "the delicate application of force" to extricate victims safely and quickly.

Time is a critical factor in the survivability of the trapped or injured victim. The initial strategy should include a time factor for completing various rescue objectives with the commensurate deployment of resources adequate for the job. Victim condition, viability, and location are all factors in determining response priorities.

Risk/Benefit and safety are major considerations in the response phase. Hazard identification and the development of a risk management plan are essential parts of the development of the strategy used in the response operation. Risks to the rescuer must be minimized or eliminated if possible. A decision not to send in rescuers may have to be made in order to ensure the safety of rescue personnel. A thorough sizeup is needed and intelligence is vital to the development of the response plan.

The general strategy in response is
"Do the greatest good for the greatest number
in the shortest period of time."

Recovery Operations

Recovery operations involve the removal of the deceased victims, as well as personal items, equipment, etc., from the structure.

Time is not a critical factor. Taking additional safety precautions, such as adding more shoring or using heavy equipment for debris removal, reduces the risk level to the rescuer. These tactics help protect the rescuers from potential hazards by making the rescue site safer to work in and reducing the exposure of the rescuer to injury.

The decision to move to the recovery phase from the response phase of operations may be difficult to make without very accurate information about the victims in the structure. Victims trapped in structural collapses have survived in void spaces for up to 2 weeks.

Recovery of personal items, important materials, and equipment from a structure after the removal of live victims and the deceased should be organized using a specialized task force or group, including the fire department for access and safety, the police department for identification of ownership and security, and public works or private contractors to assist with structural stabilization. Sites or areas for recovery should be prioritized by the IC.

A CISM program should be in place. A major factor causing stress for the rescuer is the body recovery operation. A prebriefing and a defusing of rescue personnel should be strongly considered, along with limited exposure in the area and adequate rehabilitation.

Law enforcement and the coroner are involved in the recovery and investigation. These incidents require effective coordination, the preservation of evidence, and a logistics system that may be required to support a long-term operation (longer than 2 weeks). Prior to these incidents, there is a need to train with the other organizations who would be involved in them. These include the Federal Bureau of Investigation (FBI), Bureau of Alcohol, Tobacco, Firearms and Explosives (ATF), or any other appropriate agency.

The final stages of the recovery operation involve stabilizing the structure and providing security for the site. Stabilization may involve the fire department, structural engineers, and private contractors with heavy equipment and materials to complete the task. Site security should be handled by the local police or private security services, depending on the type of occupancy and ownership. A crime scene or terrorist events would have different and stricter requirements, up to and including involvement of the FBI, ATF, and other Federal agencies.

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NOTE-TAKING GUIDE

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NOTE-TAKING GUIDE

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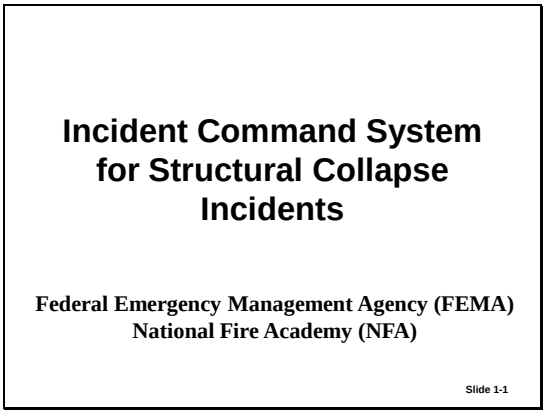

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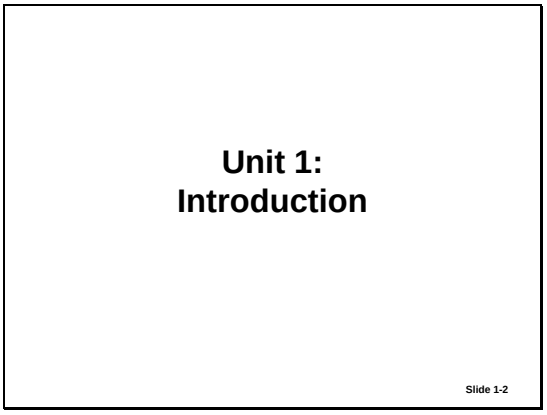

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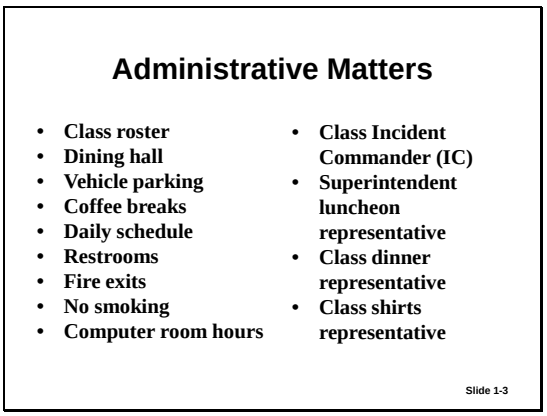

Slide 1-4

Cell Phones and Pagers

- **Cell phones and pagers shall be in the "off" or vibrate position.**
- **It is not acceptable to answer or make cell phone calls during class.**
- **Phone calls may be made at breaks or before and after class.**
- **Please do not text message during class.**
- **Please do not bring laptop computers to class.**

Slide 1-4

Slide 1-5

Student Introductions

- **Name/Title**
- **Department**
- **Years of experience in fire service**
- **Collapse experience**
- **Size of community**
- **Present responsibilities**
- **Course expectations**

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Slide 1-6

Terminal Objective

The students will be able to describe key aspects of a structural collapse.

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Slide 1-7

Enabling Objectives

The students will:

- **Identify hazards and conditions associated with a structural collapse.**
- **Understand the causes and complexities of structural collapses.**
- **Describe the difference between response and recovery operations.**

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Slide 1-8

Course Goal

To provide fire officers with an understanding of Command operations at structural collapse incidents.

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Slide 1-9

Why a Course on Structural Collapse?

This course provides

- **An appreciation for the complexity of structural collapse**
- **A review of the skills required to manage structural collapse incidents**
- **An appreciation of the need for effective incident management**

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Slide 1-10

Course Schedule/Units

Day 1

- **Unit 1: Introduction**
- **Unit 2: The Incident Command System Organizational Structure**
- **Unit 3: Response Resource Capabilities**
- **Unit 4: Scene Management: Factors and Issues**

Day 2

- **Unit 5: Response Functions**
- **Unit 6: Structural Collapse: Operational Phases**

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Slide 1-11

Video: "Working Fire, Volume 97-9" (Metro-Dade, FL)

Slide 1-11

Slide 1-12

Causes of Structural Collapse

- **Construction accidents**
- **Structural deterioration**
- **Fire, explosion, or acts of terrorism**
- **Natural hazards (e.g., earthquakes, hurricanes, tornados, floods, landslides)**
- **Transportation accidents**

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Slide 1-13

Low Frequency/High Risk

Structural collapse is considered a low-frequency but high-risk event due to:

- **Complex rescues**
- **Dangerous rescues**
- **Time-critical situations**
- **Interface of different levels of rescue capability**

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Slide 1-14

Unsafe Conditions

- **Unstable buildings**
- **Secondary collapse**
- **Confined spaces**
- **Flammable or toxic hazards**
- **Potential electrocution and drowning hazards**

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Slide 1-15

Rescuer Hazards

- **Oxygen-deficient atmosphere**
- **Ignition source**
- **Sharp, irregular, or unstable surfaces**

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Video:
"Gordon Graham on Risk Management"

Slide 1-16

Slide 1-17

Safety Considerations

- **Preplanning and training**
- **Use of the Incident Command System (ICS)**
- **Establishment of a Safety Officer (SO), safety plan, and Rapid Intervention Crew (RIC)**
- **Use of a personnel accountability system**
- **Use of appropriate protective clothing and equipment**
- **Potential electrocution and drowning hazards**

Slide 1-17

Slide 1-18

Response Operations

- **Searching for live victims**
- **Rescuing live victims**
- **Realizing that time is a critical factor for survival**
- **Considering risk/benefit factors**
- **Considering safety factors**

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Slide 1-19

Recovery Operations

- **Removal of deceased victims and personal property**
- **Realizing that time is not critical**
- **Using additional safety precautions (when possible)**
- **Using Critical Incident Stress Management (CISM)**
- **Working with law enforcement and coroner in investigation and recovery operations**
- **Stabilizing and securing the incident site**

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Slide 1-20

Summary

Structural collapse incidents require

- **An effective ICS**
- **Resource capability commensurate with the rescue operation**
- **Scene safety**
- **Response operations to rescue live victims**
- **Recovery operations to remove deceased victims**
- **Training with other organizations**

Slide 1-20

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UNIT 2:
THE INCIDENT COMMAND SYSTEM ORGANIZATIONAL STRUCTURE

TERMINAL OBJECTIVE

The students will be able to explain basic Command procedures and Incident Command System (ICS) organizational structure.

ENABLING OBJECTIVES

The students will:

1. *Identify the functions of an Incident Commander (IC).*

2. *Describe operational elements within the Command structure.*

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INTRODUCTION TO THE INCIDENT COMMAND SYSTEM

The Incident Command System (ICS) should be considered the basic Command system to use for any size or kind of structural collapse incident. The only difference between using the ICS for a very large incident and using it for a small incident is expanding the basic emergency Command organization to meet the increased needs of the larger incident. The ICS organization is flexible, adaptable, and very effective for structural collapse incidents requiring a number of major functions and multiagency or multijurisdictional response. Some of the primary features of the ICS include common responsibilities, limited span of control, incident action planning, and the establishment and use of incident facilities.

Every incident has certain major management activities or actions that must be performed. Even if the incident is small and only one or two people are involved, these activities are always performed to some degree. The ICS organization is built around five major incident management functions:

1. Command.

   This function sets objectives and priorities and has overall responsibility at the incident.

2. Operations.

   Operations conducts tactical operations to carry out the plan, develops the tactical objectives, organizes tactical units, and directs all tactical resources.

3. Planning.

   Planning develops the action plan to accomplish the objectives, collects and evaluates information, and maintains Resource Status (RESTAT).

4. Logistics.

   Logistics provides support to meet incident needs. This function also provides resources and all other services needed to support the incident.

5. Finance/Administration.

   This function monitors costs related to the incident and provides accounting, procurement, time recording, and cost analysis.

COMMAND STRUCTURE AND GENERAL STAFF

As a small incident escalates into a major incident, additional organizational support is required. The Incident Commander (IC) can become overwhelmed and overloaded quickly with information management, assigning companies, filling out and updating the tactical worksheets, planning, forecasting, requesting additional resources, talking on the radio, and fulfilling all the other functions of Command. The immediate need of the IC is support. As additional ranking officers arrive on the scene, the Command organization may be expanded through the involvement of officers and staff personnel to fill the Command and General Staff positions of the ICS organization.

Section- and unit-level positions within the ICS are activated only when their functions are required by the incident.

Until such time as a section or unit is activated, all functions associated with that section or unit are the responsibility of the IC or the appropriate section chief. It may be necessary to combine two or more units into a single unit.

The Command structure defines the lines of authority. The transfer of information within the ICS, however, is not restricted to the lines of the chain of command. An individual will receive orders from a superior, but may give information to any position in the organization within the guidelines specified in the operational procedures for each position.

The majority of positions within the ICS are not activated until the initial response is determined to be insufficient to handle the situation. When this occurs, qualified personnel are requested, through normal dispatching procedures, to fill the positions determined to be required for the type of incident in progress. If it is later determined that a specific position is not needed, the request can be canceled. Some agencies have elected to use a modular form of dispatching entire units or Incident Management Teams (IMTs).

The transition from the initial response to a major incident organization is evolutionary. Positions are filled as the corresponding tasks are required.

The Incident Commander

Overall, the IC concentrates on the "big picture." The IC focuses on the strategic plans of the entire incident and manages Command and General Staff positions.

Responsibilities include

- reviewing and evaluating the plan (and initiating needed changes);
- providing ongoing review of the overall incident;
- directing Command and General Staff positions;
- reviewing the organizational structure (and initiating changes or expansion as needed);

- staffing Command and General Staff positions; and
- establishing liaison with other internal agencies and officials, outside agencies, and property owners or tenants.

During the initial phases of the incident, the IC normally carries out the functions of these four sections:

1. Operations.

2. Planning.

3. Logistics.

4. Finance/Administration.

General Staff

The functions of Operations, Planning, Logistics, and Finance/Administration comprise the General Staff within a fully expanded Incident Command Structure.

Section-level positions can be implemented at any time, based on the needs of the incident. Typically, Operations is one of the first sections to be implemented.

Operations Section

The Operations Section is responsible for the direct management of all incident tactical activities, the tactical priorities, and the safety and welfare of the personnel working in the Operations Section. The Operations Section Chief (OSC) uses an appropriate radio channel to communicate tactical objectives to the branches, divisions, or groups.

The Operations Section is implemented most often (staffed) to maintain an effective span of control. When the number of branches, divisions, or groups exceeds the capacity of the IC to manage effectively, the IC may staff the Operations Section to reduce his span of control by transferring direct management of all tactical activities to the OSC. The IC is then able to focus his attention on managing the entire incident rather than concentrating on tactical activities.

Once the Operations Section is in place and functioning, the IC's focus should be on the strategic issues, overall strategic planning, and other components and functions of the incident as a whole. This focus is on the "big picture" and the impact of the incident from a broad perspective. The IC should provide direction, advice, and guidance to the Command and General Staff to ensure that the tactical aspects of the incident are managed in accordance with the strategic plan.

Figure 2-1 shows how a typical ICS Operations Section is organized.

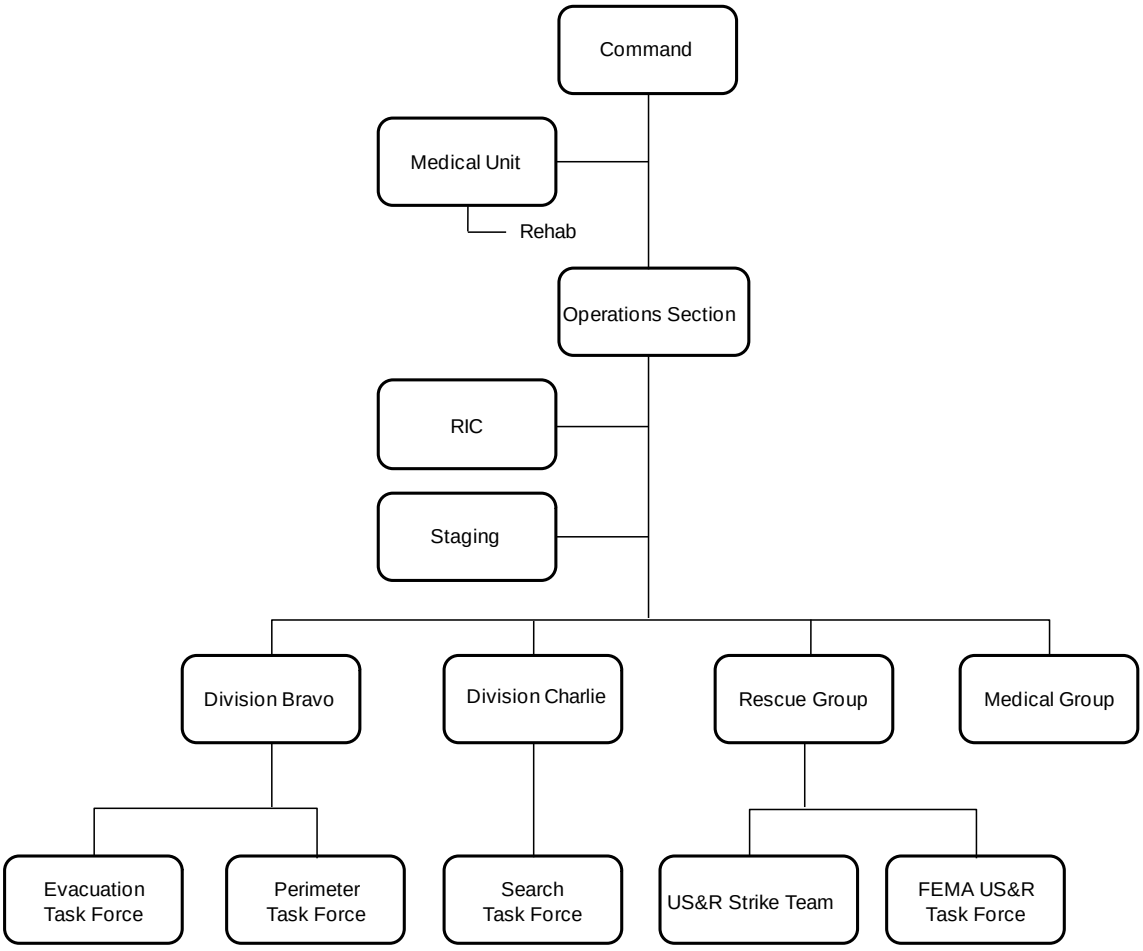


Figure 2-1
Operations Section

Operations Section Chief

The OSC is responsible for the direct management of all incident strategic and tactical activities and should have direct involvement in the preparation of the action plan for the period of responsibility.

The responsibilities of the OSC may be summarized as follows:

- manages incident strategic and tactical activities;
- coordinates activities with the IC;
- implements the action plan;
- assigns resources to tactical-level areas based on tactical objectives and priorities;

- builds an effective organizational structure through the use of branches, divisions, and groups;
- provides tactical objectives for the branches, divisions, groups, and single resources;
- controls Staging and air operations;
- provides for life safety;
- determines needs and request additional resources; and
- consults with and inform other sections and the Incident Command staff as needed.

Staging Areas

The incident scene can become congested quickly with emergency equipment if this equipment is not managed effectively. Staging Areas are locations designated within the incident area that are used temporarily to locate resources that are available for immediate assignment. For major or complex operations, the IC should establish a central Staging Area early and place an officer in charge of Staging. The radio designation "Staging" should be used for this position.

In this expanded organizational structure, the Staging Area Manager reports to the OSC. The OSC may establish one or more Staging Areas, move Staging Areas, or discontinue their use. All resources within the designated Staging Areas are under the direct control of the OSC and are available for immediate assignment. Staging requests logistical support (e.g., food, fuel, sanitation, etc.) from the Logistics Section.

Planning Section

The Planning Section is responsible for gathering, assimilating, analyzing, and processing information needed for effective decision making. Information management is a full-time task at large and complex incidents. The Planning Section serves as the IC's "clearinghouse" for information. This allows the IC's staff to provide information instead of having to deal with dozens of information sources. Critical information should be forwarded immediately to Command (or whoever needs it). Information is also used to make long-range plans. The Planning Section Chief's (PSC's) goal is to plan ahead of current events and to identify the need for resources before they are needed.

Figure 2-2 shows how the Planning Section may be organized.

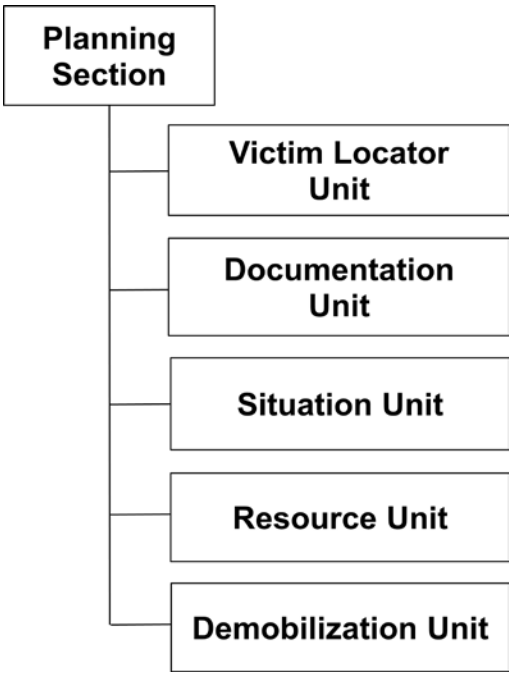


Figure 2-2
Planning Section

Planning Section Chief

The responsibilities of the PSC may be summarized as follows:

- evaluates current strategy and Incident Action Plan (IAP) with the IC;
- maintains RESTAT and personnel accountability;
- refines and recommends any needed changes to plan with Operations Section input;
- evaluates incident organization and span of control;
- forecasts possible outcome(s);
- evaluates future resource requirements;
- uses technical assistance as needed;
- gathers, updates, improves, and manages Situation Status (SITSTAT) with a standard systematic approach;
- coordinates planning needs with available outside agencies;
- plans for incident demobilization; and
- maintains incident records.

A **Victim Locator Unit** (VLU) may also be part of the Planning Section. It may begin with a Technical Specialist and develop into a full unit. The primary function of this unit is to gather intelligence that may assist in locating victims. The principal method is to interview witnesses,

occupants, neighbors, and injured victims. The VLU may consist of a unit officer and a staff of fire, police, and emergency medical services (EMS) personnel. It may be assigned directly to a Search Group. This unit's primary responsibility is to determine the victim locations in the collapsed structure and to document all pertinent information to ensure that rescue operations are timely and effective.

Logistics Section

The Logistics Section is the support mechanism for the entire organization. Logistics provides services and support systems to all the organizational components involved in the incident, including facilities, base, transportation, supplies, equipment maintenance, fueling, feeding, communications, and medical services, to include responder rehabilitation.

The organization of a Logistics Section is illustrated in Figure 2-3 below.

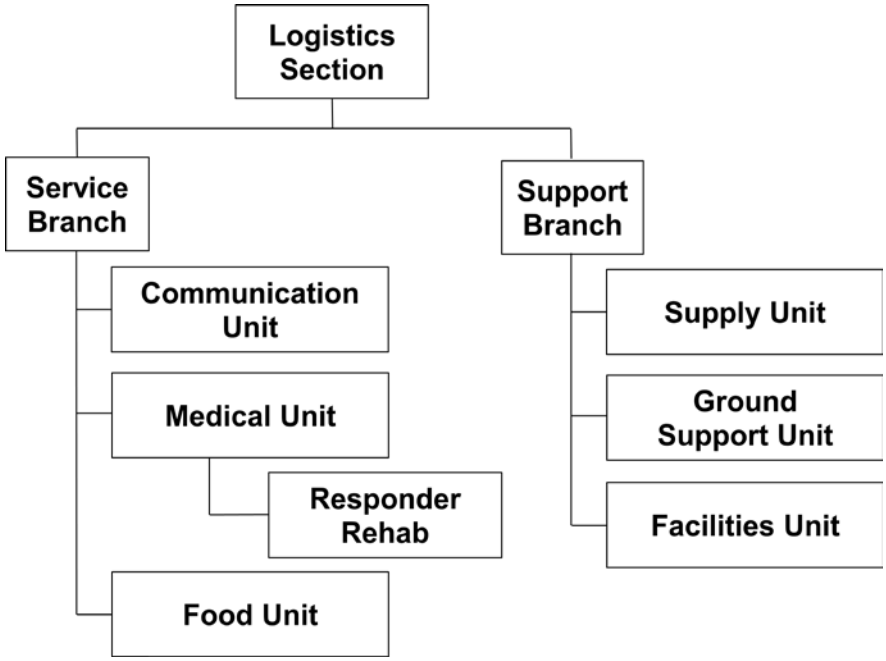


Figure 2-3
Logistics Section

Logistics Section Chief

The responsibilities of the Logistics Section Chief (LSC) may be summarized as follows:

- provides medical aid to incident personnel and manages responder rehabilitation;
- coordinates the immediate Critical Incident Stress Management (CISM) function;
- provides and manages any needed supplies or equipment;

- forecasts and obtains future resource needs (coordinates with the planning section);
- provides a communications plan and communications equipment;
- provides fuel and equipment repairs;
- obtains specialized equipment or expertise required by Command;
- provides food and associated supplies;
- secures fixed or portable sanitary facilities;
- develops transportation and traffic plans;
- provides any other logistical needs as requested by Command; and
- supervises assigned personnel.

Finance/Administration Section

The Finance/Administration Section is established on incidents when agencies involved have a specific need for financial services. Not all agencies require the establishment of a separate Finance/Administration Section. When only one specific function is required, such as cost analysis, that position can be established as a Technical Specialist in the Planning Section.

The organization of a Finance/Administration Section is illustrated in Figure 2-4.

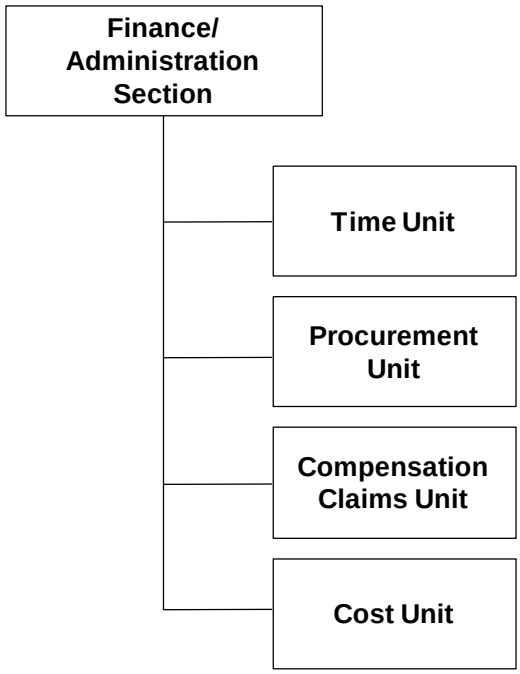


Figure 2-4
Finance/Administration Section

Finance/Administration Section Chief

The responsibilities of the Finance/Administration Section Chief may be summarized as follows:

- procures services and supplies from sources inside and outside the fire department or jurisdiction as requested by Command (coordinates with Logistics);
- documents all financial costs of the incident;
- documents for possible cost recovery of services and supplies;
- analyzes and manages legal risk for incidents (e.g., hazardous materials cleanup or building demolition);
- documents for compensation and claims of injury;
- obtains any and all needed incident documentation for potential cost-recovery efforts; and
- is responsible for all legal aspects of the incident.

This position may be staffed by a trained civilian if appropriate.

Command Staff

Command Staff positions are established to assume responsibility for key activities that are not a part of the General Staff. There are three Command Staff positions:

- Public Information Officer (PIO);
- Safety Officer (SO); and
- Liaison Officer.

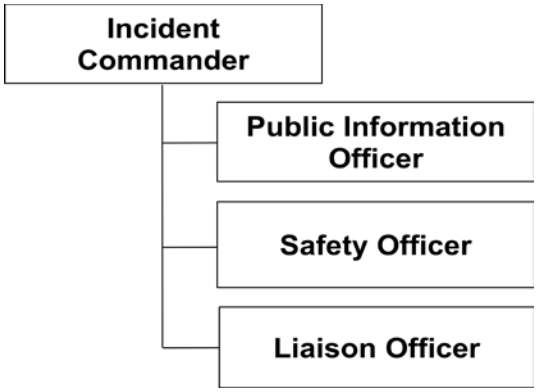


Figure 2-5
Command Staff Positions

An Intelligence and Investigation position may be established depending upon the nature and location of the incident, or requirements established by the IC.

Public Information Officer

The PIO's function is to develop accurate and complete information regarding incident cause, size, current situation, resources committed, and other matters of general interest. The PIO is the point of contact for the media and other Government agencies that desire information directly from the incident. In either a Single or Unified Command structure, only one PIO is designated. Assistants may be assigned from the parent agency or from other agencies or departments involved.

The PIO should provide a "media area" away from the Incident Command Post (ICP) and direct all the media representatives to report to that area. A Joint Information Center (JIC) may be needed. An assistant PIO should accompany the media at all times.

A structural collapse incident in your community will be a media event. The print, radio, and television media will be present. They will be seeking information, and the print and television media will want photos of the incident. The PIO will probably need a few assistants to handle the needs of the media. Frequent briefings are necessary to supply media representatives with the current and accurate information demanded for effective public relations.

Safety Officer

The SO's function is to assess hazardous and unsafe situations and to develop measures for ensuring personnel safety. The SO has emergency authority to stop and prevent unsafe acts. In a Unified Command (UC) structure, a single SO is designated. Assistants may be required and may be assigned from other agencies or departments making up the UC. The SO ensures that a responder rehabilitation and medical unit has been established. The SO position should be implemented early in a structural collapse incident. Consider assigning assistant SOs that have structural collapse training, specifically for rescue sites.

Liaison Officer

The Liaison Officer's function is to be a point of contact for representatives from other agencies. In a Single Command structure, the representatives from assisting agencies would coordinate through the Liaison Officer. Under a UC structure, representatives from agencies not involved in the UC would coordinate through the Liaison Officer. Agency representatives assigned to an incident should have the authority to speak on all matters for their agency.

COMMAND PROCEDURES

Purpose

Fire departments respond to a wide range of emergency incidents. These procedures identify standard operating guidelines (SOGs) that can be employed in establishing Command. The

system provides for the effective management of personnel and resources for the safety and welfare of personnel.

Command procedures are designed to:

- fix the responsibility for Command on a specific individual through a standard identification system that depends on the arrival sequence of members, companies, and chief officers;
- ensure that a strong, direct, and visible Command is established from the onset of the incident;
- establish an effective incident organization, defining the activities and responsibilities assigned to the IC and to other individuals operating within the ICS;
- provide a system to process information to support Incident Command, planning, and decision making; and
- provide a system for the orderly Transfer of Command to subsequently arriving officers.

Responsibilities of Command

The IC is responsible for the completion of the strategic and tactical priorities:

- locate and remove endangered occupants and treat the injured;
- stabilize the incident and provide for life safety;
- conserve property; and
- provide for the safety, accountability, and welfare of responding personnel (this priority is ongoing throughout the incident).

The ICS is used to facilitate the completion of the tactical priorities. The IC is the person who drives the ICS toward that end. The IC is responsible for building a Command structure that matches the organizational needs of the incident to achieve the completion of the tactical priorities for the incident. The functions of Command define standard activities that are performed by the IC to achieve the tactical priorities.

Functions of Command

- assume and announce Command and establish an effective operating position (ICP);
- rapidly evaluate the situation (sizeup);
- initiate, maintain, and control the communications process;
- identify the overall objectives, strategies, develop an IAP, and assign companies and personnel consistent with plans and SOGs;
- develop an effective Incident Command Organization;
- support incident operations;
- review, evaluate, and revise the action plan (as needed); and
- provide for the continuity, transfer, and termination of Command.

The IC is responsible for all of these functions. As Command is transferred, so is the responsibility for these functions. The first five functions must be addressed immediately upon initial assumption of Command.

ESTABLISHING COMMAND

The first fire department member or unit to arrive at the scene shall assume Command of the incident. The initial IC shall remain in Command until Command is transferred or the incident is stabilized and terminated.

The first unit or member on the scene must initiate whatever parts of the ICS are needed to manage the incident scene effectively.

A single-company incident (trash fires, single-patient EMS incidents, etc.) may require only that the company or unit acknowledge its arrival on the scene.

For incidents that require the commitment of multiple companies or units, the first unit or member on the scene must establish and announce "Command," and develop an Incident Command Structure appropriate for the incident.

The first-arriving fire department unit activates the Command process by giving an initial radio report that includes

- unit designation of the unit arriving on the scene;
- a brief description of the incident situation (i.e., building size, occupancy, hazmat release, multivehicle accident, etc.);
- obvious conditions (working fire, hazmat spill, collapsed building, multiple patients, etc.);
- brief description of action taken;
- any obvious safety concerns;
- assumption, identification, and location of Command; and
- request or release resources as required.

Examples

Structural Collapse

"Engine 27 is on the scene of a three-story masonry apartment house collapse with occupants trapped inside. Engine 27 is Vine Street Command and is initiating search and rescue."

Structural Collapse

"Truck 10 is on the scene of an 11-story, steel and concrete building under construction collapse. Approximately 10 workers are trapped and injured. Seventh Street is closed because of debris. Truck 10 is Seventh Street Command and is initiating search-and-rescue operations with Engine 10. Give me a second-alarm assignment, a heavy rescue, five ambulances, and the police for traffic control. Staging is at Seventh and Flower."

Transportation Incident

"Engine 57 is on the scene of a train derailment into the back of several dwellings at 58th Street and Vermont. There is a chemical spill that may be hazardous materials and is flowing toward 60th Street. There appear to be many injured and trapped in the dwellings. We need mutual aid. Give me a fourth-alarm assignment, two heavy rescues, a multicasualty medical assignment with 10 ambulances, a hazmat team, and the police for traffic and evacuation. Engine 57 is Vermont Command."

Single-Company Incident

"Engine 6 is on the scene of a dumpster fire with no exposures. Engine 6 can handle."

Radio Designation

The radio designation "Command" is used along with the geographical location of the incident (i.e., "Seventh Street Command," "Metro Center Command"). This designation does not change throughout the duration of the incident. The designation of "Command" remains with the officer currently in Command (the IC) of the incident throughout the event.

Command Options

The responsibility of the first-arriving unit or member to assume command of the incident presents several options, depending on the situation. If a Chief Officer, member, or unit without tactical capabilities (i.e., staff vehicle, no equipment, etc.) initiates Command, the establishment of an ICP should be a top priority. At most incidents, the initial IC is a Company Officer (CO). The following Command options define the CO's direct involvement in tactical activities and the modes of Command that may be used.

Investigation Mode

These situations generally require investigation by the initially arriving company while other units remain in a staged mode. The officer should go with the company to investigate, while using a portable radio to Command the incident.

Attack Mode

This is used when the CO's direct involvement is required to take an immediate action that will stabilize the incident. In these situations, the CO goes with the crew to provide the appropriate level of supervision. Examples of these situations include

- initial search and rescue of surface victims;
- critical life safety situations (e.g., rescue) that must be achieved in a compressed time;
- any incident where the safety and welfare of firefighters are of major concern; and
- obvious working incidents that require further investigation by the CO.

Where fast intervention is critical, use of the portable radio permits the CO's involvement in the attack without neglecting Command responsibilities. The Attack Mode should not last more than a few minutes and ends with one of the following:

- The situation is stabilized.

- The situation is not stabilized and the CO must withdraw to the exterior and establish an ICP. At some time, the CO must decide whether or not to withdraw the remainder of the crew--based on the crew's capabilities and experience, safety issues, and the ability to communicate with the crew. **No crew should remain in a hazardous area without radio communication capability.**

- Command is transferred to a higher-ranking officer. When a chief officer is assuming Command, the chief officer may opt to return the CO to the CO's crew, or assign the CO to a subordinate position.

The Attack Mode is applicable only at incidents when the incident site is safe enough for the responders to take immediate action. The IC must make perform a risk/benefit analysis for the response. Remember, safety is the top priority.

Command Mode

Certain incidents, by virtue of their size, complexity, or potential for rapid expansion, require immediate strong, direct, overall Command. In such cases, the CO initially assumes an exterior, safe, and effective Command position and maintains that position until relieved by a higher-ranking officer. A tactical worksheet should be initiated and used to assist in managing this type of incident.

If the CO selects the Command Mode, the following options are available regarding the assignment of the remaining crew members:

- The officer may "move up" within the company and place the company into action with the remaining members. **One of the crew members will serve as the acting CO and should be provided with a portable radio.** The collective and individual capabilities and experience of the crew regulate this action.

- The officer may assign the crew members to work under the supervision of another CO. In such cases, the officer assuming Command must communicate with the officer of the other company and indicate the assignment of those personnel.

- The officer may elect to assign the crew members to perform staff functions to assist Command.

A CO assuming Command has a choice of modes and degrees of personal involvement in the tactical activities, but continues to be fully responsible for the Command functions. The initiative and judgment of the officer are of great importance. The modes identified are guidelines to assist the officer in planning appropriate actions. The actions initiated should conform to one of the previously mentioned modes of operation and the appropriate safety precautions.

PASSING COMMAND

Should be limited to verified rescues or when immediate intervention would mitigate the problem. This is indicated when the initial commitment of the first-arriving company requires a full crew (i.e., immediate rescue situation), and the next-arriving company will assume Command upon arrival.

"Passing Command" to a unit that is not on the scene can create a gap in the Command process and compromise Incident Command. **To prevent this "gap," Command shall not be assumed by an officer who is not on the scene.** Command can be passed to an incoming unit, but cannot be assumed until that arriving officer contacts the original officer and then assumes Command.

When a chief officer arrives at the scene at the same time as the first-arriving company, the chief officer should assume Command of the incident.

Should a situation occur in which a later-arriving company or chief officer cannot locate or communicate with Command (after several radio attempts), they assume, and announce their assumption of, Command, and initiate whatever actions are necessary to confirm the safety of the missing crew.

TRANSFER OF COMMAND

Command is transferred to improve the quality of the Command organization. The following guidelines outline the Transfer of Command process. Local departments must predetermine the Transfer of Command (through various ranking officers).

- The first fire department member arriving on the scene automatically assumes Command. This is normally a CO, but it could be any fire department member up to, and including, the fire chief.

- The first-arriving CO assumes Command after the Transfer of Command procedures have been completed (assuming an equal or higher-ranking officer has not already assumed Command).

- The first-arriving chief officer may assume Command of the incident following Transfer of Command procedures.

- The second-arriving chief officer should report to the ICP for assignment.

- Later-arriving, higher-ranking chief officers may choose to assume Command or assume advisor positions.

Within the Chain of Command, the actual Transfer of Command is regulated by the following procedure:

- The officer assuming Command may do a preliminary sizeup prior to communicating by radio or face-to-face with the person being relieved. Face-to-face is the preferred method to transfer Command.

- The person being relieved briefs the officer assuming Command, indicating a minimum of the following information:

  - Incident conditions (fire location and extent, hazmat spill or release, number of patients, etc.).

  - Action plan for the incident.

  - Progress toward completion of the tactical objectives.

  - Safety considerations.

  - Deployment and assignment of operating companies and personnel.

  - Appraisal of need for additional resources.

- The person being relieved of Command should review the tactical worksheet with the officer assuming Command. This sheet provides the most effective framework for Command transfer because it outlines the location and status of personnel and resources in a standard form that should be well known to all members.

- The person being relieved of Command is reassigned--based on the needs of the incident --by the officer assuming Command.

GENERAL CONSIDERATIONS

The response and arrival of additional ranking officers on the incident scene strengthens the overall Command function. As the incident escalates, the IC should use these subordinate officers as needed.

A fire department's communications procedures should include communications necessary to gather and analyze information to plan, issue orders, and supervise operations.

For example:

- sizeup;
- assignment completed;
- additional resources required;
- unable to complete the assignment; and/or
- special information (partial collapse, hazmat in area, etc.).

The arrival of a ranking officer on the incident scene does not automatically mean that Command has been transferred to that officer. Command is only transferred when the outlined Transfer of Command process has been completed. Chief officers and staff personnel should report directly to a designated location for assignment by the IC.

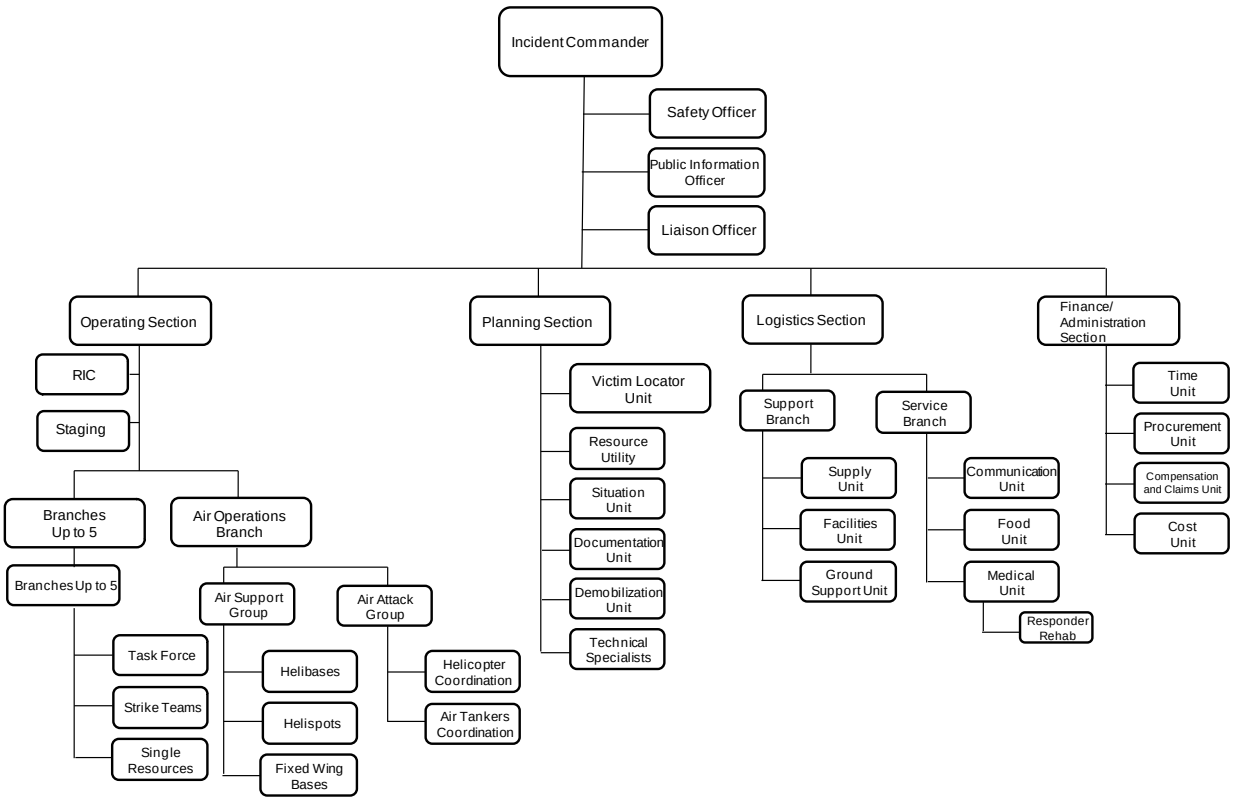
When time and circumstances allow, the officer who will be assuming Command should endeavor to do his own sizeup prior to assuming Command. It gives the officer the opportunity to see where companies are operating and an idea of their effectiveness. It also gives the officer a chance to get his own perspective and understanding of the scope and magnitude of the incident. By doing this prior to assuming Command, the officer can gain some understanding of the current action plan and ease the transition from one IC to another. The officer should announce his on-scene arrival to the IC, and advise the IC that he will be doing the sizeup. Until the officer completes the sizeup and the formal Transfer of Command process has taken place, the current IC retains Command of the incident.

The IC has the overall responsibility for managing an incident. Simply stated, the IC has complete authority and responsibility for the incident. If a higher-ranking officer wants to effect a change in the Command of an incident, the higher-ranking officer must first be on the scene of the incident, and then use the Transfer of Command procedure to assume Command.

In extreme and life-threatening situations that affect personnel safety, anyone can effect change by initiating corrective action and notifying Command.

Command Structure

The IC is responsible for developing an organizational structure based on SOGs as soon as possible after arrival, making a sizeup, developing objectives, and implementing initial tactical control measures. The size and complexity of the organizational structure are determined by the scope of the emergency and availability of resources.



STRUCTURAL COLLAPSE INCIDENT COMMAND SYSTEM ORGANIZATION CHART (EXAMPLE)

Incident Command System Operations

The ICS should be considered the basic Command system to be used on any size or kind of structural collapse incident. The only difference between using the ICS on a very large incident and using it for a small incident is expanding the basic emergency Command organization to meet the increased needs of the larger incident. Thus, the full establishment of the ICS should be viewed as an extension of the existing incident organization. The decision to expand the organization is that of the IC, and is made when it is clear that the initial attack or reinforced attack is insufficient. This determination is made by the IC at the scene.

Incident Command System Organizational Development

The following examples are guides in using the basic ICS organization for incidents of various sizes.

Initial Response	1 to 5 Increments/First Alarm
Reinforced Response	Greater Alarm/Mutual Aid

Initial Response

The first-arriving unit or officer assumes Command until arrival of a higher-ranking officer. Upon arrival of a higher-ranking officer, they are briefed by the onscene IC. The higher-ranking officer then assumes Command. This Transfer of Command must be announced. The officer being relieved of Command responsibilities is reassigned by the new IC.

Reinforced Response

A reinforced response is initiated when the onscene IC determines that the initial response resources are insufficient to deal with the size or complexity of the incident.

Command Organization

The Command organization must develop at a pace that stays ahead of the tactical deployment of personnel and resources. In order for the IC to manage the incident, they first must be able to direct, control, and track the positions and functions of all operating companies. Building a Command organization is the best support mechanism the IC can use to achieve the harmonious balance between managing personnel and incident needs. Simply put, this means

Large-Scale and Complex Incidents	=	Large Command Organization
Small-Scale and "Simple" Incidents	=	Small Command Organization

Note: The IC should have more people working than commanding.

Command Objectives

The IC is responsible for the overall objectives and strategies of the Command structure. The action plan should cover all objectives, strategies, and tactics, as well as supporting activities needed during the entire operational period. The action plan defines where and when resources are assigned to the incident to control the situation. This plan is the basis for developing a Command organization, assigning all resources, and establishing objectives.

The strategic-level responsibilities include

- assessing the situation (sizeup);
- establishing overall incident objectives;
- setting priorities;
- developing an IAP;
- obtaining and assigning resources;
- evaluating progress, predicting outcomes, and planning; and
- assigning SMART objectives.

SMART Objectives:

S = **S**pecific
M = **M**easurable
A = **A**ction-oriented
R = **R**easonable
T = **T**ime

Tactical Level

Branches, divisions, and groups direct operational activities toward specific objectives. Branches, divisions, and groups are responsible for specific geographic areas or functions and for supervising assigned personnel. A tactical-level assignment comes with the authority to make decisions and assignments within the boundaries of the overall plan and safety conditions. The accumulated achievements of tactical objectives should accomplish the strategy as outlined in the action plan.

Task Level

The task level refers to those activities normally accomplished by individual companies or specific personnel. The task level is the level at which the work is actually done. Task-level activities are routinely supervised by COs. The accumulated achievements of task-level activities should accomplish tactical objectives.

Example

The following example, invoking one of the largest military operations ever undertaken, is used to describe the relationship between the objective level, the tactical level, and the task level. **Operation Overlord** was the plan to invade Europe by landing on the beaches of Normandy on June 6, 1944 (focuses on United States participation in a very simplistic example of just some of the operations involved).

The objectives (what needs to be done):

- Land troops; secure and hold the Normandy beaches within 48 hours.
- Place troops inland behind enemy lines within 24 hours.
- Reinforce and support landing within 72 hours.
- Move forces inland and link with allied forces to move toward Berlin within 96 hours.

The tactical level (how it will be done):

- Land troops on beaches by amphibious landing.
- Provide naval sea bombardment and air cover.
- Drop airborne troops in behind enemy lines.
- Reinforce and support invasion with naval supply and additional troops.
- Link up with allied forces at defined areas.

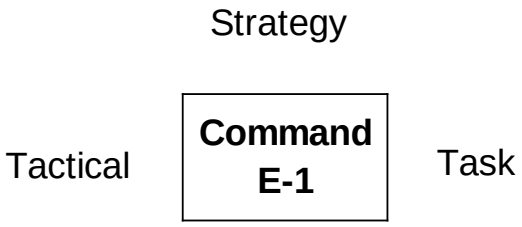
The task level (who will do it, when it will be done, where it will be done):

- On the morning of June 6, 1944, land portions of the U.S. 1st Army on Omaha and Utah beaches.
- Bomb shore defenses using U.S. Navy ships.
- Provide air cover and attack shore defenses with U.S. Army Air Corps.
- Make airborne landing in tactical support of beach landings using the 82nd and 101st Airborne around the Ste-Mere-Eglise area prior to the beach landings.
- Move remainder of 1st Army and 3rd Army into beachhead, and move troops inland toward Cherbourg, Bayeux, and St-Lo, securing occupied areas.
- Set up logistical support system to supply troops from the beaches inland.
- Link up United States forces and allied forces inland at various points along the front and continue moving forces into France.

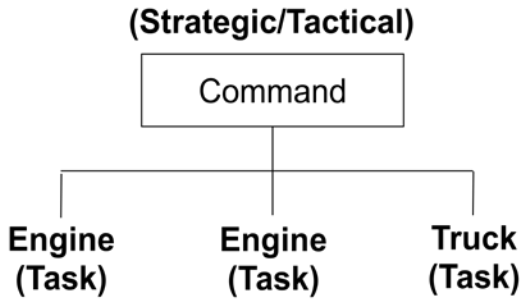
COMMAND STRUCTURE--EXPANDING THE ORGANIZATION

Command Structure--Basic Organization

The most basic structure combines all three levels of the Command structure. The CO on a single-engine response to a dumpster fire determines the strategy and tactics and supervises the crew doing the task.



The basic structure for a "routine" incident involving a small number of companies requires only two levels of the Command structure. The role of Command combines the strategic and tactical levels. Companies report directly to Command and operate at the task level.



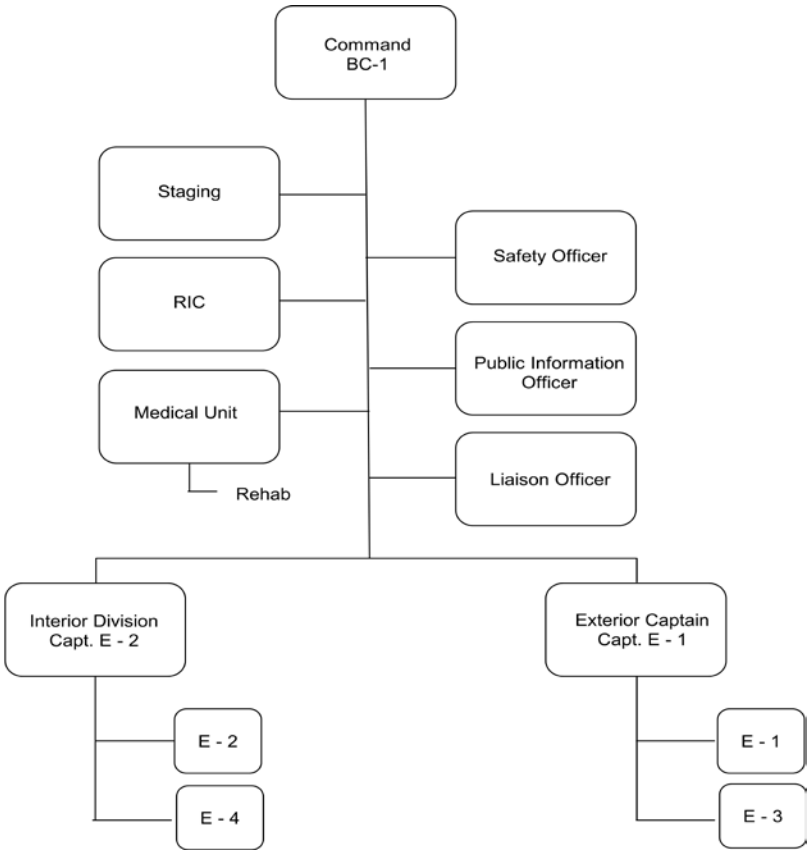
Command Structure--Division and Group

Divisions represent geographic operations and groups represent functional operations. The title of the individuals in charge of divisions or groups is "Supervisor," i.e., Division Supervisor. The following examples illustrate the use of these organizational elements.

Divisions and Groups

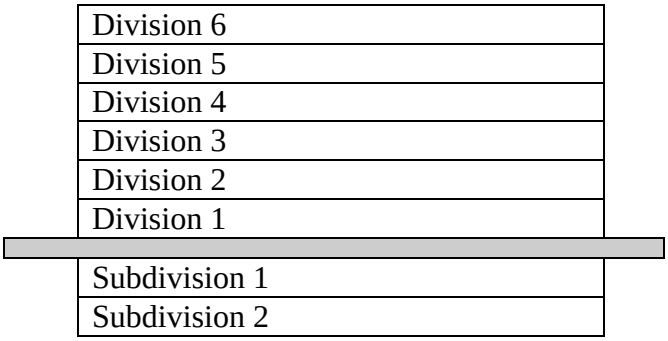
As an incident escalates, the IC should group companies to work in divisions and groups to reduce span of control and increase effectiveness. A division is the organizational level having responsibility for operations within a defined geographic area. To use division and group terminology effectively, a department must have a designated method of dividing an incident scene.

Division Designation

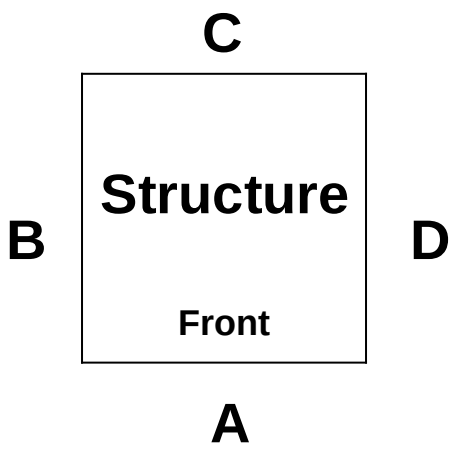


Tactical Assignments for a Multistory Incident Division Designation

In multistory occupancies, divisions are usually indicated by floor number (Division 6 indicates sixth floor). When operating in levels below grade, such as basements, the use of subdivisions is appropriate.



Exterior approaches are identified by alphabetical letter identifiers. These letters start at the front of a building and progress clockwise around the building as illustrated. Division A always indicates the front or address side of the building.



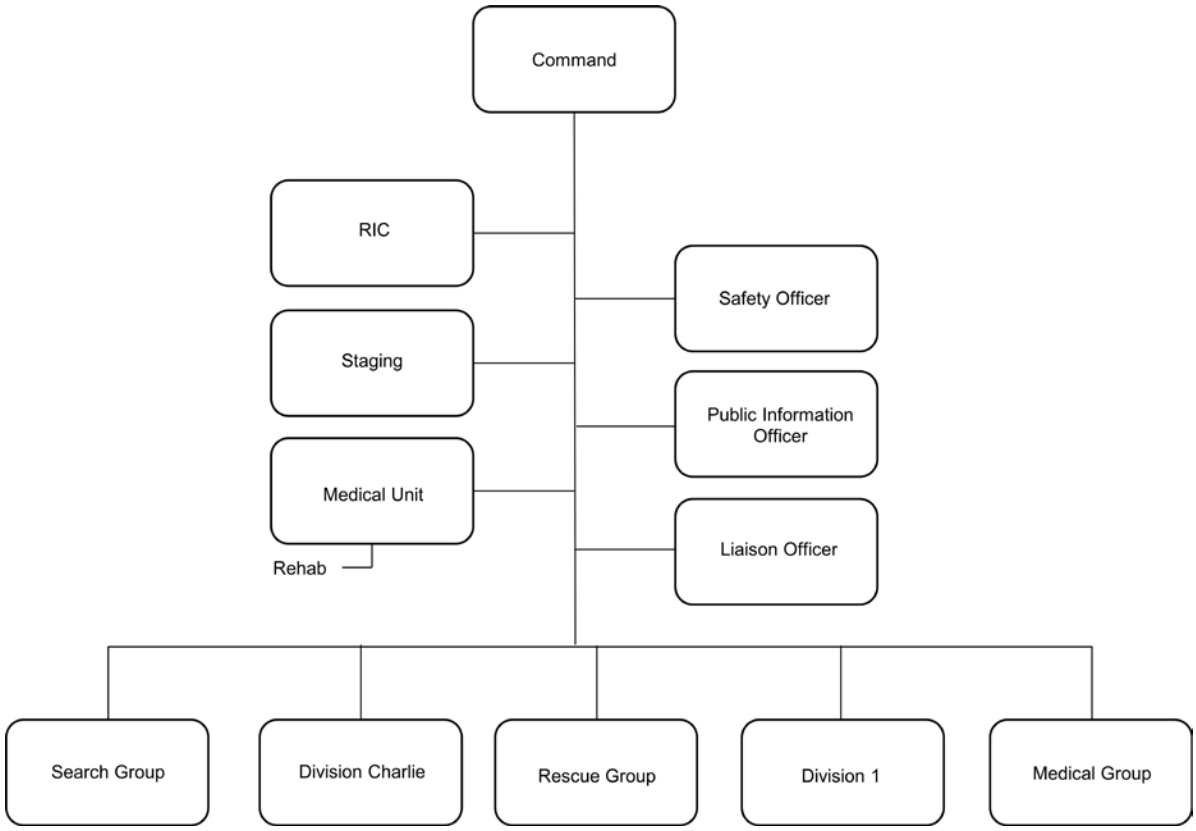
Note: For clarity during radio communications, the phonetic designations of "Alpha," "Bravo," "Charlie," and "Delta" are suggested. For example, "Command from Division Delta."

A division is that organizational level having responsibility for operations within a defined geographic area. The division level is organizationally situated between single resources, task force, or the strike team and the branch.

Group Designation

Groups are an organizational level responsible for a specific functional assignment at an incident. Examples are Search Group, Rescue Group, Hazmat Group, Medical Group, Evacuation Group, and Security Group. They may be made up of a variety of resources needed to accomplish the task for which they are organized.

Division/Group Designation



Command Structure--Divisions and Groups; Basic Operational Approach

The use of divisions and groups in the Command organization provides a standard system to divide the incident scene into smaller subordinate Command units or areas.

Complex emergency situations often exceed the capability of one officer to manage the entire operation effectively. Divisions and groups reduce the span of control to more manageable, smaller-sized units. Divisions and groups allow the IC to communicate principally with these organizational levels, rather than with multiple individual COs, thus providing an effective Command structure and incident scene organization. Generally, division and group responsibilities should be assigned early in the incident, typically to the first company assigned to a geographic area or function. This early establishment of divisions and groups provides an effective incident command organization framework on which the operation can be built and expanded.

The number of divisions and groups that can be managed effectively by the IC varies. The normal span of control is three to seven. In fast-moving, complex operations, a span of control of no more than five divisions and groups is indicated. In slower-moving, less complex operations, the IC may manage more divisions and groups effectively.

Where the number of divisions and groups exceeds the span of control that the IC can manage effectively, the incident organization can be expanded to meet incident needs by assigning a Branch Director. Each branch is responsible for several of these divisions and groups and should be assigned a separate radio channel, if available.

The division and group procedures provide an array of major functions that may be implemented selectively, according to the needs of a particular situation. This places responsibility for the details and execution of each particular function on a division and group.

When effective divisions and groups have been established, the IC can concentrate on overall strategy and resource assignments, allowing the divisions and groups to manage their assigned units. The IC determines strategy and assigns tactical objectives and resources to each division and group. Each division and group supervisor is responsible for the tactical deployment of the resources at the supervisor's disposal in order to complete the tactical objectives assigned by the IC. Division and group supervisors are also responsible for communicating their needs and progress to Command.

Divisions and groups reduce the overall amount of radio communications. Most routine communications within a division and group should be conducted face-to-face between COs and their supervisors. This process reduces unnecessary radio traffic and increases the ability to transmit critical radio communications.

The safety of firefighting personnel represents the major reason for establishing divisions and groups. Each division and group supervisor must maintain communication with assigned companies to control both their position and their function. This supervisor must constantly monitor all hazardous situations and risks to personnel. The division and group supervisors must take appropriate action to ensure that companies are operating in a safe and effective manner.

The IC should begin to assign divisions and groups based on the following factors:

- Situations that involve a number of companies or functions beyond Command's span of control. Command initially should assign responsibility for division and group operations to the first CO assigned to a geographic area or function. As additional chief officers become available, they may be assigned to relieve the CO of responsibility for the area or function.

- Situations in which companies are involved in complex operations (large interior or geographic area, multiple search operations, hazardous materials operations, technical rescues, shoring operations, etc.).

- Situations in which companies are operating from tactical positions over which Command has little or no direct control (i.e., they are out of Command's sight).

- Occasions on which the situation presents special hazards and close control is required over operating companies (i.e., unstable structural conditions, heavy fire load, marginal offensive situations, etc.).

When establishing divisions and groups, the IC assigns and advises each unit as follows:

- tactical objectives;
- a radio designation (Rescue Group, Division "A"); and
- the identity of resources assigned to the specific division and group.

Division and Group Guidelines

Divisions and groups are regulated by the following guidelines:

- It is the ongoing responsibility of Command to assign divisions and groups as required for effective emergency operations; this assignment relates to both geographic and functional tactical assignments.

- Command advises each division and group of specific tactical objectives. The overall strategy and plan are provided if time permits, so that the supervisors of the divisions and groups have some idea of what is going on and how their assignment fits into the overall plan.

- The number of companies assigned to a division or group depends on conditions within that area of responsibility. Command maintains an awareness of the number of companies operating within a division or group and of the capability of that specific division or group to direct operations effectively. A division or group supervisor controls the resources within the division and group; it should notify the IC if additional resources are needed.

- The incident scene should be subdivided in a manner that makes sense. This should be accomplished by assigning divisions to geographic locations (e.g., Division 4, Division "A") and assigning functional responsibilities to groups (e.g., Rescue Group, Medical Group).

- Division and group supervisors use the division/group designation in radio communications (e.g., "Command from Rescue Group").

- Divisions and groups are commanded by COs, or any other fire department member designated by Command.

- The specific guideline for optimum span of control in divisions and groups is five. This applies to operational divisions and groups. Many of the Command Staff functional positions (Information, Safety, Liaison, etc.) are preassigned to certain individuals and are driven by SOGs. These types of functional responsibilities should operate automatically and, as such, should not be included in the IC's span of control.

- Regular Transfer of Command procedures should be followed in transferring division and group responsibility.

- In some cases, a supervisor may be assigned to an area or function to evaluate and report conditions and advise Command of needed tasks and resources. The assigned officer proceeds to the division or group, evaluates and reports conditions to the IC, and assumes responsibility for directing resources and operations within their assigned area of responsibility.

- The division and group supervisor must be in a position to supervise and monitor operations directly. This requires the division and group supervisor to be equipped with the appropriate protective clothing and equipment for the supervisor's area of responsibility. Division and group supervisors assigned to operate within a hazard zone must be accompanied by a partner if they are not in close proximity to operating personnel.

- These supervisors are responsible for and in control of all assigned functions within their division or group. This requires each division and group supervisor to:

  - Complete objectives assigned by Command.

  - Account for all assigned personnel.

  - Ensure that operations are conducted safely.

  - Monitor work progress.

  - Redirect activities as necessary.

  - Coordinate actions with related activities and adjacent divisions and groups.

  - Monitor welfare of assigned personnel.

  - Request additional resources as needed.

  - Provide Command with essential and frequent progress reports.

  - Reallocate or release resources within the division and group.

- The division and group supervisor should be readily identifiable and maintain a visible position as much as possible.

- The primary function of COs working within a division or group is to direct the operations of their individual crews in performing assigned tasks. COs advise their division or group supervisor of work progress, preferably face-to-face. All requests for additional resources or assistance within a division or group are made by the division or group supervisor. These supervisors communicate with Command.

- Each division and group supervisor keeps Command informed of conditions and progress in the supervisor's division or group through regular progress reports. These supervisors must limit progress reports to essential information only.

- Command must be advised immediately of significant changes, particularly those involving the ability or inability to complete an objective, or of hazardous conditions, accidents, structural collapse, etc.

- When a company is assigned from Staging to an operating division or group, the company is told which division and group it is reporting to and the name of the supervisor. The division or group supervisors are informed of which companies or units have been assigned by the IC. It is then the responsibility of these supervisors to contact the assigned company to transmit any instructions relative to the specific action requested.

- Division and group supervisors monitor the condition of the crews operating in their area of responsibility. Relief crews are requested in a manner that assures the safety of personnel and maintains progress toward the division's or group's objectives.

- These supervisors ensure an orderly and thorough reassignment of crews to responder rehabilitation. Crews must report to responder rehabilitation intact to facilitate accountability.

BRANCHES

As previously discussed, divisions and groups identify tactical-level assignments in the Command structure. As the span of control becomes excessive, the incident becomes more complex, or it has developed two or more distinctly different operations (i.e., fire, medical, evacuation, etc.), the organization can be subdivided further into branches.

Branches may be established on an incident to serve several purposes.

In general, branches may be established for the following reasons:

- Span of control.

- Functionality.

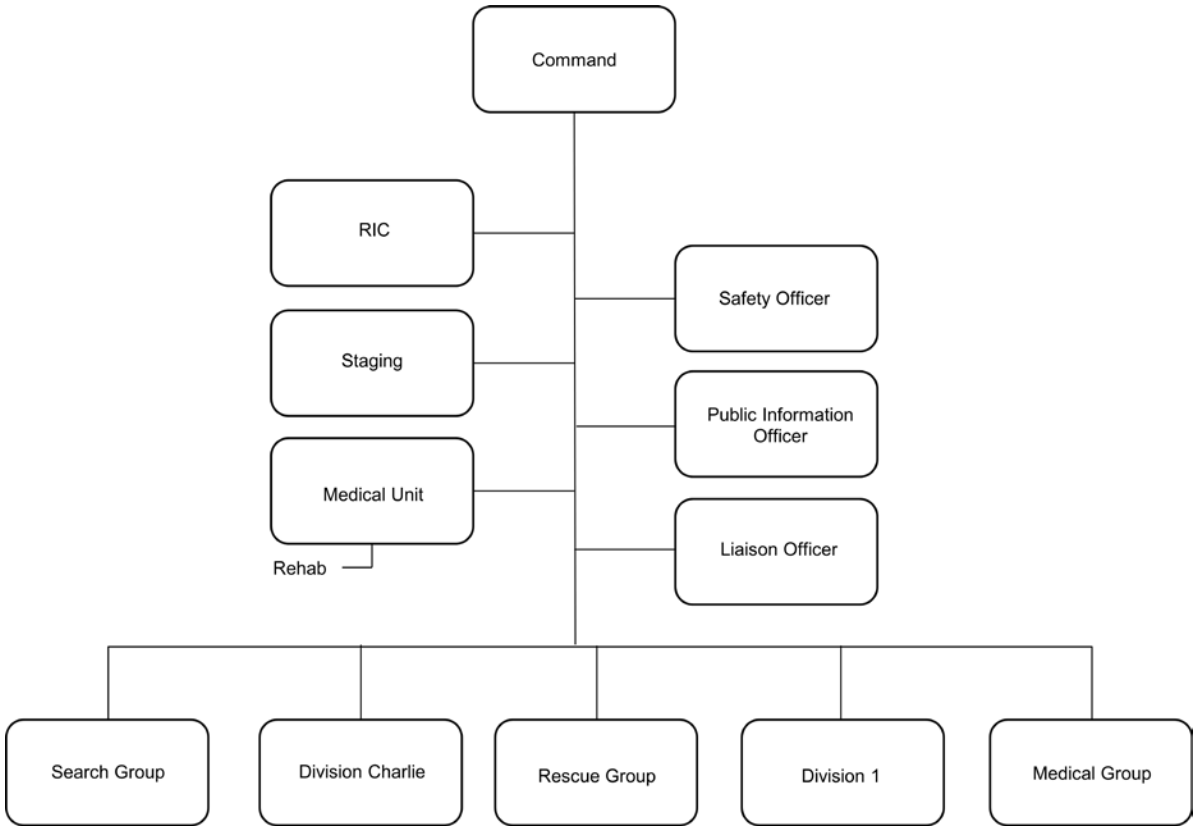
- Geographical area.

- When the numbers of divisions and groups exceed the recommended span of control for the OSC, the IC or OSC should designate a multibranch structure and allocate the divisions and groups within those branches.

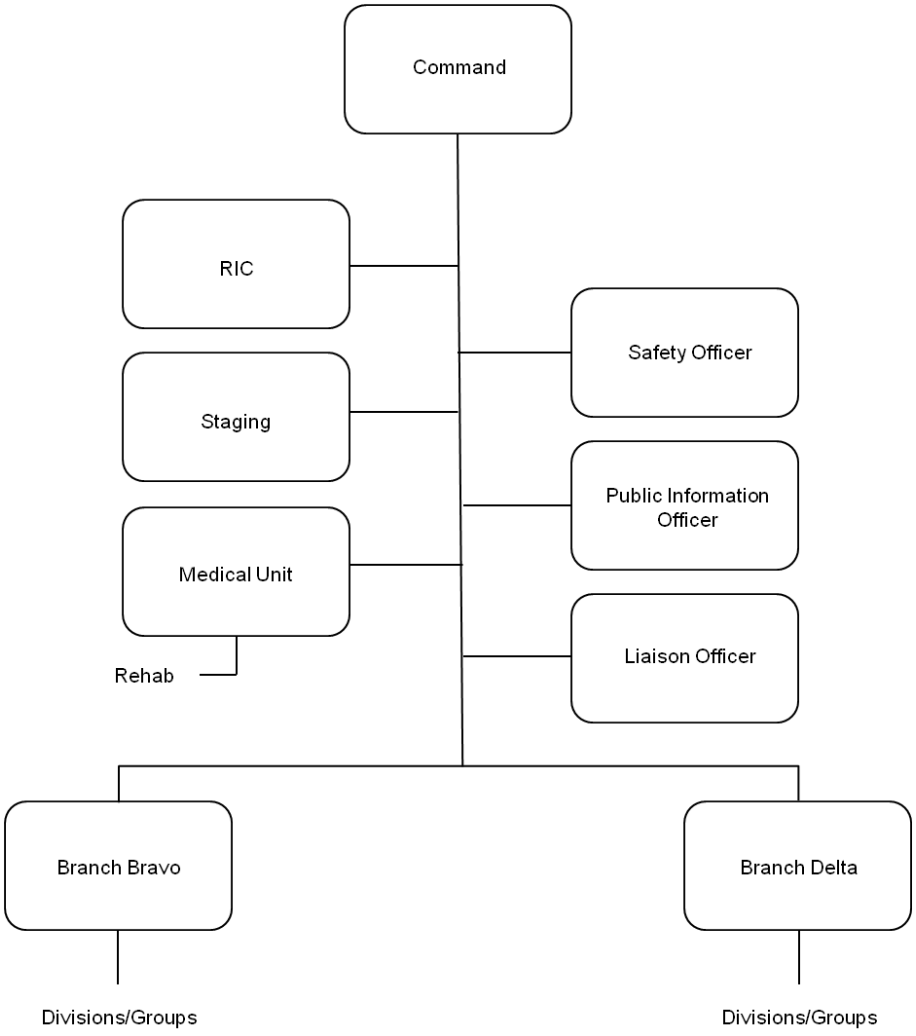
In a structural collapse incident, search, rescue, medical, exposures, and law enforcement could each become a branch operation.

In the following example, one group and four divisions report to the OSC, with one additional division and two groups being added. At this point, a two-branch organization was formed, as reflected below.

Before Multibranch Structure



Two-Branch Organization



Branches should operate in their area of responsibility on separate radio channels, and communicate to Operations on a different channel, if possible. The radio designation of branches should reflect the objective of the branch, when designating functional branches (i.e., Hazmat Branch, Multicasualty Branch, etc.). Tactical branches may be designated numerically (i.e., Branch I, Branch II, Branch III, etc.). When Operations implements branch directors, the division and group supervisors **must** be notified of their new supervisor. This information should include

- to which branch the division or group is currently assigned; and
- the radio channel on which the division or group in the branch is operating.

Radio communications are then directed from the division or group supervisor to the branches--instead of Command or Operations. Branch directors will receive from Command or Operations their direction, which will then be relayed to the division and groups.

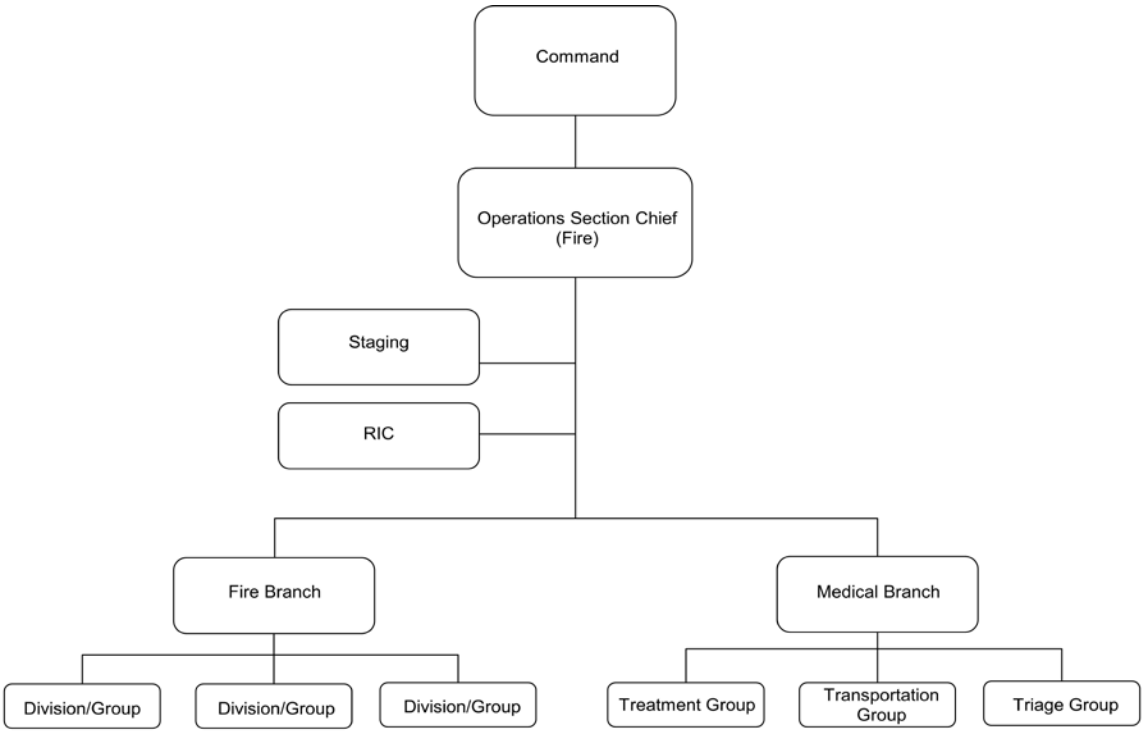
In structural collapse operations, branches should be located at operational locations. When a structural collapse incident encompasses a large geographic area, it is more effective to have branches in tactical locations. When branches are sent to tactical positions, they should immediately implement Command and control procedures within their branch.

Another example of expansion to the branch level may involve a structural collapse with a hazmat problem and a large number of casualties.

Functional Branch Structure

When the nature of the incident calls for a functional branch structure, such as a major structural collapse incident within a jurisdiction, three departments within the jurisdiction (police, fire, and health service) will each have a functional branch operating under the direction of a single OSC. In this example, the OSC is from the fire department, with deputies from police and health services departments. Other alignments could be made, depending upon the jurisdictional plan and the type of emergency. Note that the IC in this situation could be either Single or Unified Command, depending upon the jurisdiction.

Functional Branches



Multijurisdictional Incidents

When the incident is multijurisdictional, resources are best managed under the agencies that normally have control over those resources.

Branches should be used at incidents where the span of control with divisions and groups is maximized, or at incidents involving two or more distinctly different management components (e.g., a large collapse with a major search-and-rescue operation and a large number of patients). The IC may elect to assign branches to forward positions to manage and coordinate activities, as illustrated.

Air Operations

When the incident requires the use of aircraft, such as for the transportation of victims from a multicasualty incident, highrise rooftop rescue, swift-water rescue, or wildland fire, the OSC should establish the Air Operations Branch organization. Its size, organization, and use will depend primarily upon the nature of the incident and the availability of aircraft.

Command--Single and Unified

Command is responsible for overall management of the incident. Command also includes certain staff functions. The Command function within the ICS may be conducted in two general ways:

- Single Command; and
- Unified Command.

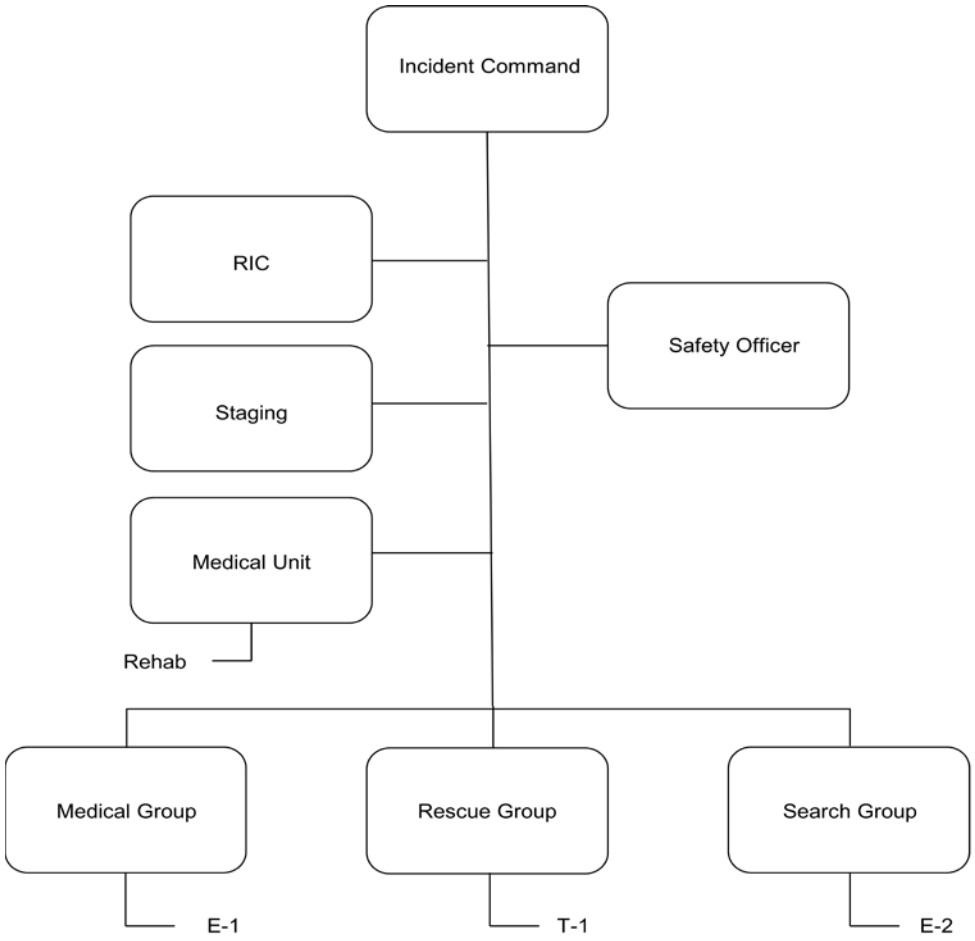
Single Command

Within a jurisdiction in which an incident occurs and where no overlap of jurisdictional boundaries is involved, a single IC is designated by the jurisdictional agency to have overall management responsibility for the incident.

The IC prepares incident objectives that serve as the foundation for subsequent action planning. The IC approves the final action plan and approves all requests for ordering and releasing primary resources. The IC may have a deputy. The deputy should have the same qualifications as the IC. The deputy may work directly with the IC, be a relief IC, or perform certain specific assigned tasks.

At an incident within a single jurisdiction where the nature of the incident is primarily the responsibility of one agency--e.g., fire--the deputy may be from the same agency. In a multiagency or multijurisdictional incident, or one that threatens to become multijurisdictional, the deputy role may be filled by an individual from another agency with a primary responsibility or designated by the adjacent jurisdiction. More than one deputy could be involved. Another way of organizing to meet multiagency or multijurisdictional situations is to use a Unified Command (UC).

This figure depicts an incident with Single Incident Command authority.



Unified Command

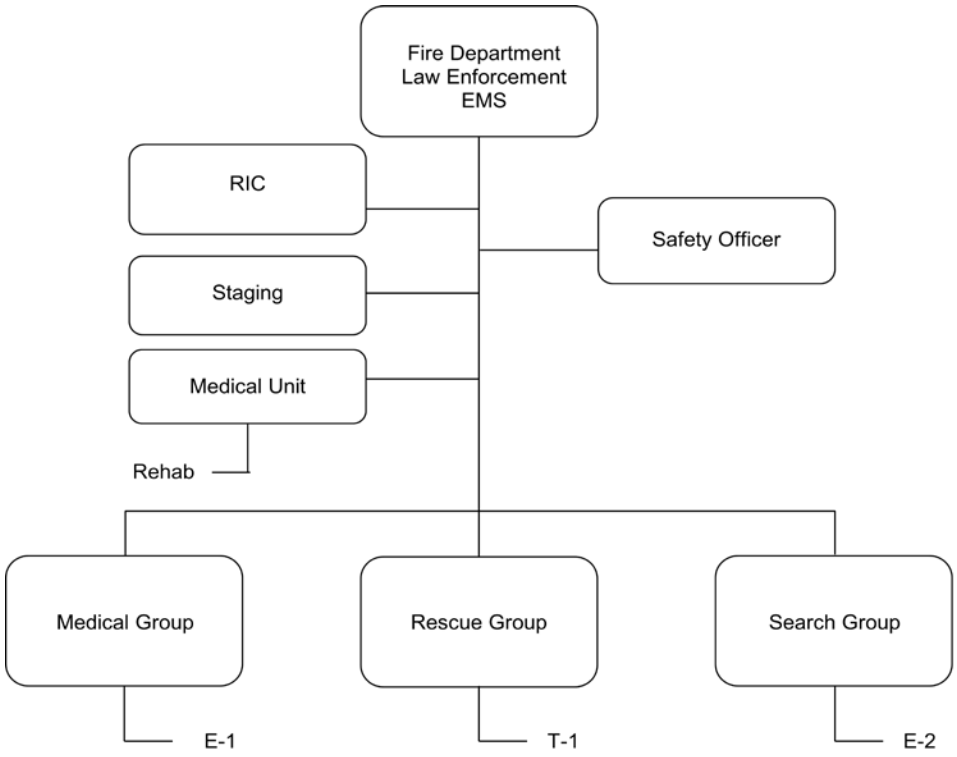
A UC structure is called for under the following conditions:

When the incident is totally contained within a single jurisdiction, but more than one department or agency shares management responsibility due to the nature of the incident or the kinds of resources required (e.g., a World Trade Center-type incident). Fire, medical, and law enforcement all have immediate but diverse objectives. An example of this kind of UC structure is depicted below.

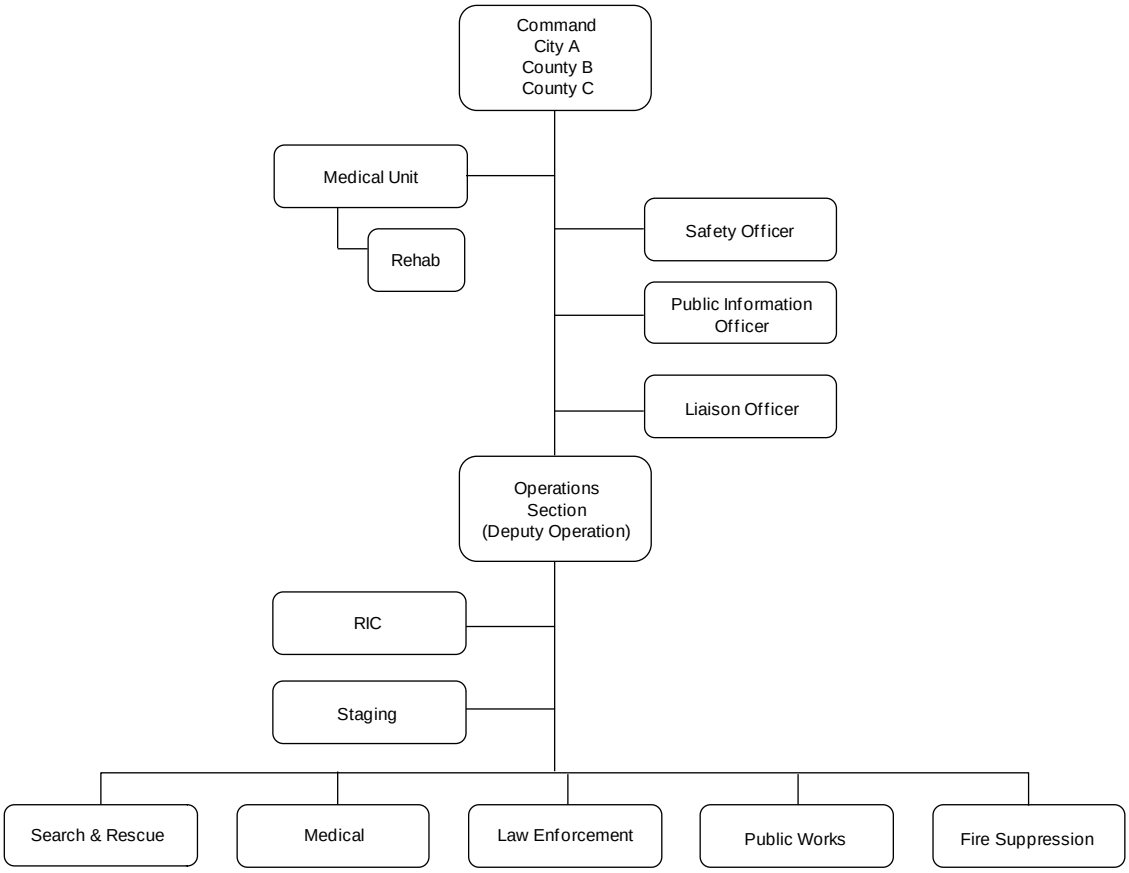
Unified Command Structure

Multidepartment, Same Jurisdiction

When the incident is multijurisdictional, such as a major earthquake or hurricane. An example of this kind of UC structure is shown on the next page.



Unified Command Structure Multijurisdictional



Single/Unified Command Differences

The primary differences between the Single and Unified Command structures are as follows:

- In a Single Command structure, a single IC is solely responsible, within the confines of the IC's authority, to establish objectives and overall management strategy associated with the incident. The IC is directly responsible for followthrough to ensure that all functional-area actions are directed toward accomplishment of the strategy. The implementation of planning required to effect operational control is the responsibility of a single individual (OSC) who reports directly to the IC.

- In a UC structure, the individuals designated by their jurisdictions, or by departments within a single jurisdiction, must jointly determine objectives, strategy, and priorities. As in a Single Command structure, the OSC has responsibility for implementation of the plan. The determination of which agency or department provides the OSC must be made by mutual agreement of the UC. It may be done on the basis of greatest agency or jurisdictional involvement, number of resources involved, existing statutory authority, or consensus opinion concerning the individual's qualifications.

Differences between National Incident Management System and Fire RESources of California Organized for Potential Emergencies Incident Command System

The Information Officer position is called the Public Information Officer (PIO).

The Intelligence and Investigation function may be organized in one of the following ways:

- officer within the Command Staff;
- unit within the Planning Section;
- branch within the Operations Section; and
- separate General Staff Section.

Intelligence and Investigation Options in the National Incident Management System

As an Officer in the Command Staff

This option may be most appropriate in incidents with little need for tactical or classified intelligence and in which incident-related intelligence is provided by supporting agency representatives through real-time reach-back capabilities.

As a Unit within the Planning Section

This option may be most appropriate in incidents with some need for tactical intelligence and in which no law enforcement entity is a member of the UC.

As a Branch within the Operations Section

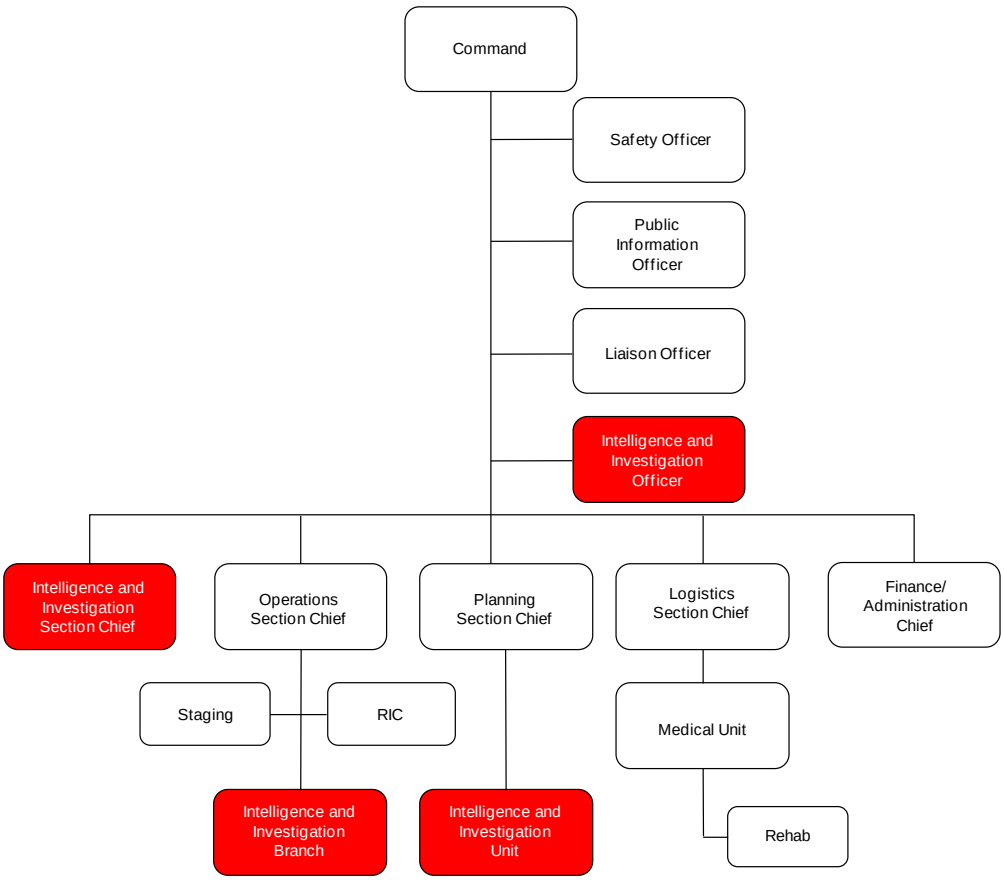
This option may be most appropriate in incidents with a high need for tactical intelligence (particularly classified intelligence) and in which law enforcement is a member of the UC.

As a General Staff Section

This option may be most appropriate when an incident is heavily influenced by intelligence factors.

- It is also appropriate when there is a need to manage and/or analyze a large volume of classified or highly sensitive intelligence or information.

- This option is particularly relevant to a terrorism incident, for which intelligence plays a crucial role throughout the incident life cycle.



Intelligence and Investigation Options in the National Incident Management System--Summary

- Regardless of how it is organized, the Intelligence and Investigation function is also responsible for developing, conducting, and managing information-related security plans and operations as directed by the IC.

- These can include information security and operational security activities, as well as the complex task of ensuring that sensitive information of all types (e.g., classified information, sensitive law enforcement information, proprietary and personal information, or export-controlled information) is handled in a way that not only safeguards the information but also ensures that it gets to those who need access to it so that they can effectively and safely conduct their missions.

- The Intelligence and Investigation function also has the responsibility for coordinating information- and operational-security matters with public awareness activities that fall under the responsibility of the PIO, particularly where such public awareness activities may affect information or operations security.

NOTETAKING GUIDE

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NOTE-TAKING GUIDE

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Unit 2:
The Incident Command System Organizational Structure

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Terminal Objective

The students will be able to explain basic Command procedures and the Incident Command System (ICS) organizational structure.

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Enabling Objectives

The students will:
- **Identify the functions of an Incident Commander (IC).**
- **Describe operational elements within the Command structure.**

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Incident Command System Functions

Primary functions include
- **Command**
- **Planning**
- **Operations**
- **Logistics**
- **Finance/Administration**

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Commander

Command responsibilities are to:
- **Assess the incident (sizeup)**
- **Develop an Incident Action Plan (IAP)**
- **Organize Incident Management Team (IMT) and response**
- **Request and deploy resources**
- **Manage the incident**
- **Provide for safety**
- **Assume overall responsibility at the incident**

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Command

Is responsible for developing a plan that includes
- **Setting objectives**
- **Establishing strategies**
- **Assigning resources**
- **A Command organization**

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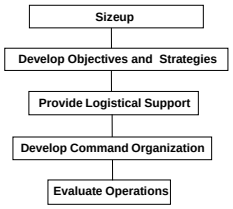
Incident Management Process



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Incident Commander

The IC will:

- **Concentrate on the "big picture"**
- **Concentrate on strategic plans of the entire incident**
- **Manage Command and General Staff positions**

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Incident Commander (cont'd)

IC responsibilities include

- **Reviewing, evaluating, planning, and initiating changes**
- **Providing ongoing review of overall incident**
- **Directing Command and General Staff positions**
- **Reviewing the organizational structure**
- **Staffing Command and General Staff functions**
- **Establishing liaison with internal and external agencies, owners, and tenants**

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Incident Commander (cont'd)

The IC is responsible for each of the following functions:

- **Operations**
- **Planning**
- **Logistics**
- **Finance/Administration**

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General Staff--Section Chiefs

- **As the incident escalates, additional support is required.**
- **The IC can become overwhelmed quickly.**
- **Arriving personnel fill Command and General Staff positions.**
- **Staff these positions only as needed.**

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Operations Section Chief

- **Responsible for direct management of all tactical activities and priorities and personnel safety and welfare**
- **Often staffed due to span-of-control problems at the IC level**
- **Staffed when the IC cannot be involved in tactics without losing the "big picture"**

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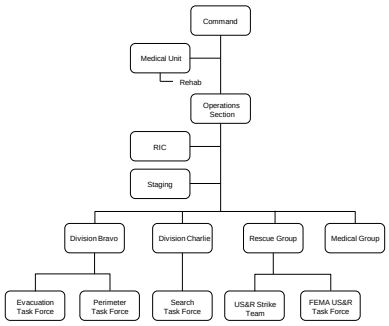
Operations Section



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Staging Area

- **Located within the incident area.**
- **Temporary location for immediately available resources.**
- **Established early in the incident.**
- **Run by an assigned Staging Area Manager.**
- **During an expanded incident, Staging reports to Operations (if established).**
- **All resources in Staging are controlled directly by Operations.**

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Planning Section

Responsibilities include

- **Gathering information**
- **Analyzing information**
- **Processing information**
- **Developing an IAP**
- **Maintaining situation and resource status**

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Planning Section Chief

- **Information management is a full-time job.**
- **Planning Section Chief (PSC) serves as the IC's information clearinghouse.**
- **Critical information is forwarded directly to the IC.**
- **Long-term plans are needed for complex operations.**

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Planning Section Chief (cont'd)

The PSC's goals:
- **Plan ahead**
- **Identify projected resources**

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Planning Section Chief (cont'd)

Responsibilities include
- **Evaluating current strategy/planning with the IC**
- **Maintaining Resource Status (RESTAT)**
- **Recommending changes to the IAP**
- **Evaluating incident organization and span of control**
- **Forecasting possible outcomes**
- **Using technical assistance**

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Planning Section Chief (cont'd)

Responsibilities include

- **Evaluating tactical priorities, specific critical factors, and safety**
- **Gathering, updating, improving, and managing situation status**
- **Coordinating planning needs with outside agencies**
- **Planning for demobilization**
- **Maintaining incident records**

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Victim Locator Unit

- **Reports to PSC**
- **Functions as a (situational) intelligence-gathering unit**
- **Interviews**
  - **Witnesses**
  - **Occupants**
  - **Neighbors**
  - **Injured victims**

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Logistics Section Chief

- **The support mechanism for the organization.**
- **Logistics support may be very complex. Complexity is based on:**
  - **Amount and type of specialized resources assigned.**
  - **Duration of incident.**

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Logistics Section Services

Services and support functions include

- **Command Post (CP), base, and other facilities**
- **Transportation/Traffic plan**
- **Supplies**
- **Equipment maintenance**
- **Fueling**
- **Feeding**
- **Communications**
- **Responder Medical Unit/rehabilitation**

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Logistics Section Chief

Responsibilities include

- **Establishing Medical Unit/responder rehab (for response personnel)**
- **Coordinating immediate Critical Incident Stress Management (CISM)**
- **Providing and managing supplies and equipment**
- **Forecasting and obtaining future resource needs**
- **Providing communications plan and equipment**

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Logistics Section Chief (cont'd)

Responsibilities include

- **Providing fuel and equipment repairs**
- **Obtaining specialized equipment/ expertise**
- **Providing food and associated supplies**
- **Securing needed (fixed or portable) facilities**
- **Meeting any logistical needs of the IC**

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Finance/Administration Section Chief

Responsibilities include

- **Procuring services and supplies**
- **Documenting all financial costs**
- **Documenting for recovery of services and supplies**
- **Documenting compensation and claims for injuries**
- **Obtaining all documentation for cost recovery**
- **Handling all legal requirements**

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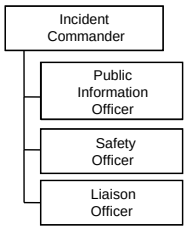
Command Staff



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Public Information Officer

Develops and maintains informational briefings covering details such as:

- **Incident cause**
- **Incident size**
- **Current situation**
- **Resources committed**
- **Other matters of general interest**

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Public Information Officer (cont'd)

Responsibilities include

- **Establishing media point of contact and Joint Information Center (JIC), if appropriate**
- **Addressing the media (at frequent briefings)**
- **Providing a "media area" (away from the CP)**
- **Requesting assistance (as required)**
- **Providing photo opportunities for the media**

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Safety Officer

Responsibilities include

- **Assessing hazards and unsafe conditions**
- **Developing measures for ensuring personnel safety**
- **Stopping (or preventing) unsafe acts**
- **Assigning Assistant Safety Officers (SOs) who have structural collapse training**
- **Ensuring that responder Medical Unit/ rehabilitation is established**

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Liaison Officer

Responsibilities include

- **Acting as a point of contact for representatives from other agencies.**
- **Representatives from outside agencies must have authority to speak on behalf of their agencies.**

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Establishing Command

- **First fire department member to arrive at the scene assumes Command.**
- **The IC remains in Command until Command is transferred or until the incident is stabilized.**
- **The response of additional ranking officers strengthens the Command function.**

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Passing Command

- **Should be limited to verified rescues or when immediate intervention would mitigate the problem**
- **Usually accomplished onscene by radio**

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Transfer of Command

- **Command is transferred to improve the quality and effectiveness of the Command organization.**
- **Transfer of Command may be predetermined by local departments.**

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Transfer of Command Process

- **First-arriving fire department Company Officer (CO) assumes Command.**
- **First-arriving chief officer may assume Command (using Transfer of Command guidelines).**
- **Second-arriving chief officer reports to CP for assignment.**
- **Later-arriving chief officers may assume Command or perform other duties.**

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Transferring Command

Guidelines:

- **Officer assuming Command should do a sizeup prior to Transfer of Command.**
- **Member being relieved briefs the officer assuming Command.**
- **Officer relieved is reassigned.**

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Command Objectives

Responsibilities include

- **Assessing the situation (sizeup)**
- **Establishing overall objectives**
- **Setting priorities**
- **Developing IAP**
- **Obtaining and assigning resources**
- **Evaluating progress, predicting outcomes, and planning**
- **Assigning SMART objectives**

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SMART Objectives

S--Specific
M--Measurable
A--Action-Oriented
R--Reasonable
T--Time

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Command Strategies

Responsibilities:

- **Directs operational activities toward specific objectives.**
  – This level includes branch directors and division and group supervisors responsible for geographic areas or functions.
- **Develops strategies to accomplish objectives outlined in the IAP.**

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Tactics

- **Activities accomplished by supervisors assigned to strategic positions**
- **Constitute level at which work is actually performed**
- **Normally supervised by COs**
- **Accomplish Command strategies**

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Basic Organization
Example
One Company

Strategy

Tactical Command E-1 **Task**

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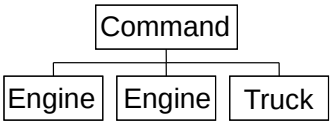
Strategic/Tactical
Three Companies



Task **Task** **Task**

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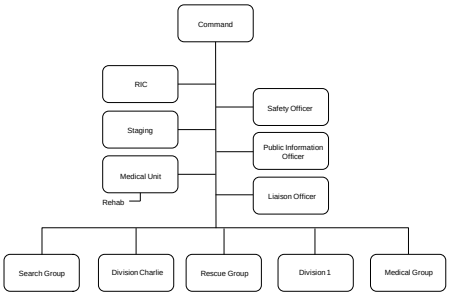
Divisions and Groups



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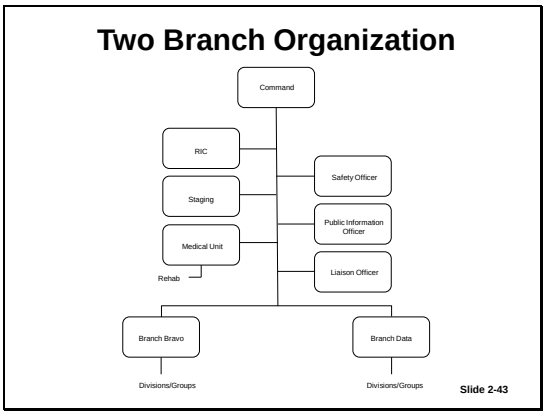

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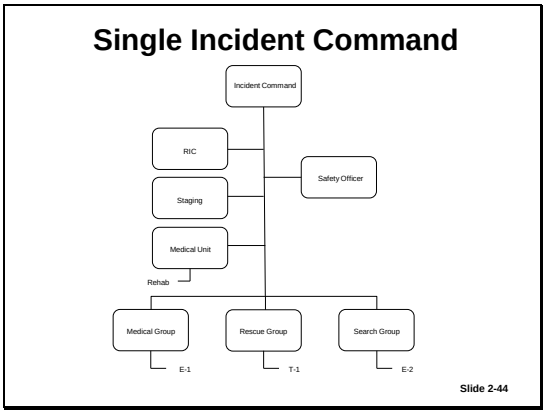

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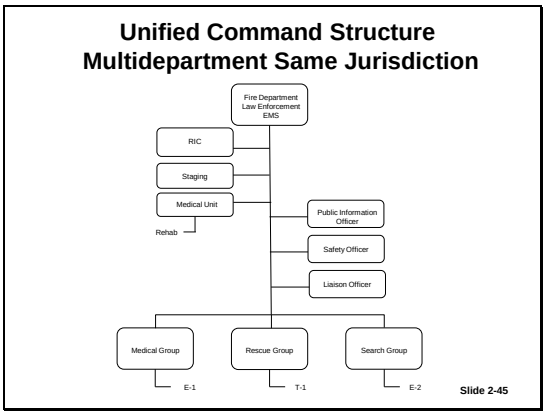

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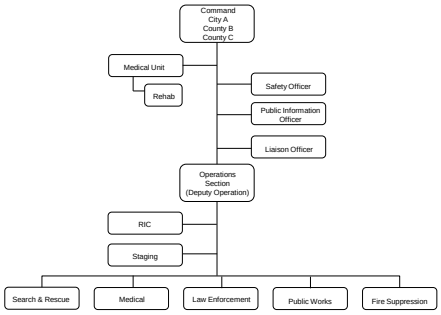
Multijurisdictional Unified Command



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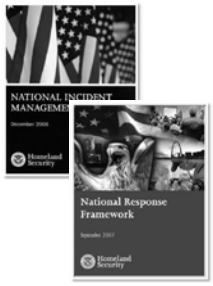
National Incident Management System/National Response Framework

Differences between National Incident Management System (NIMS) and Fire RESources of California Organized for Potential Emergencies (FIRESCOPE) ICS

- **Information Officer position called the Public Information Officer (PIO)**
- **Addition of the Information and Intelligence function**



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ADDITIONAL INFORMATION NATIONAL INCIDENT MANAGEMENT SYSTEM/ NATIONAL RESPONSE FRAMEWORK

- **First responder DHS training requirement**
- **Factsheet**
- **Video**

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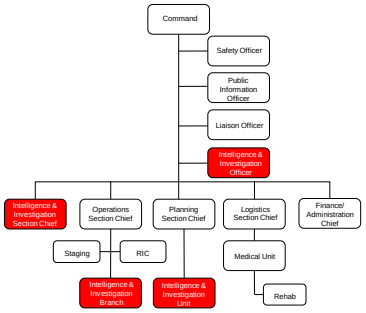
Intelligence and Investigation Options



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Summary

- **ICS functions are used, although specific positions may not be filled.**
- **The IC is responsible for sizeup, setting objectives and strategies, requesting and deploying resources, organizing, and incident management.**
- **ICS Command and General Staff positions are activated as needed.**

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Summary (cont'd)

- **First-arriving fire department member establishes ICS and takes all initial actions.**
- **Transfer of Command improves effectiveness.**
- **The IC is responsible for developing the organization based on the needs of the incident.**
- **The three levels of Command are strategic, tactical, and task.**

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Summary (cont'd)

- **The basic Command organization may be expanded using divisions, groups, and branches.**
- **Command may be single or unified when needed for multiagency or multijurisdictional incidents.**

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UNIT 3:
RESPONSE RESOURCE CAPABILITIES

TERMINAL OBJECTIVE

The students will be able to identify various resource levels, types, and capabilities used for structural collapse incidents.

ENABLING OBJECTIVES

The students will:

1. *Define the types and levels of structural collapse risks within a jurisdiction.*
2. *Define various levels of capability for a structural collapse incident.*
3. *Describe resources available through local, State, and Federal agencies.*

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INTRODUCTION

The Incident Commander (IC) at a structural collapse incident must be able to identify the type of collapse that has occurred and the hazards to rescuers and victims, and be able to match the appropriate level of rescue capability with the problem.

There are many levels of capability, including spontaneous volunteers, standard fire companies, heavy-rescue squads, technical rescue teams (e.g., confined space and Federal Emergency Management Agency (FEMA) National Urban Search and Rescue (US&R) Task Forces). There are many agencies that may respond to a structural collapse. This type of incident is normally a multiagency response because of the many tasks that must be accomplished (e.g., medical, law enforcement, heavy equipment resources, etc.).

Structural collapse resources may be available from:

- local jurisdictions;
- State and Federal governments;
- members of the private sector; and
- trained civilian volunteers.

Government Levels of Response

Local Level

This includes trained volunteers, standard fire companies, fire companies with specialized equipment, technical rescue, and heavy-rescue teams or companies.

Regional Level

This provides access to resources from surrounding jurisdictions through mutual aid or contract.

State Level

These resources may include specialized teams, equipment, task forces, and the National Guard.

Federal Level

This includes FEMA US&R Task Forces, FEMA incident support teams (ISTs), the military, and many other supporting agencies. (There are 28 FEMA Task Forces.)

International Level

This response may involve search-and-rescue teams of varying capabilities from other countries.

The IC must know what resources are needed and how to manage and coordinate those resources.

RISK/HAZARD ANALYSIS

The fire service has a key role in collapsed structure response and should have the capability to respond effectively to the various types of incidents encountered. The question is, "What type of capability is needed in each community?" This question may be answered by performing a risk/hazard analysis.

Many departments form technical rescue teams after a specific rescue incident has shown a deficiency or inability to handle the rescue safely and effectively. In some cases, a team is developed before a major rescue incident occurs, due to the expectation of emergencies created by risks in the community.

In determining whether a team is needed in your community, you must first do some research to evaluate the risks in your area. A risk analysis helps you to determine the level of risk and potential hazards so that you can decide whether a team is really needed. This is particularly important for two reasons. First, political leaders want to know what risks exist to justify funding a team. Second, you want to know what risks confront your department, what type of hazardous scenarios to train for, and what rescue equipment is needed to address the risks. A thorough risk analysis should define your objectives and justify the effort of forming a team.

Risk/Hazard Analysis Elements

A risk/hazard analysis involves the following elements.

Performing a Risk Assessment

A risk assessment is based on historical data plus an analysis of newly introduced hazards and potentially high-risk problems. Begin by assessing past rescue needs in your response area. You may look at incident reports to determine frequency, incident type, and location. Other potential sources of data include your State workers' compensation office, State and national Occupational Safety and Health Administration (OSHA) offices, construction and contractors' associations, building officials and inspectors, and safety managers at local businesses. Past experience may indicate the likelihood of technical rescue-type incidents during major construction projects.

Regardless of the size or economic makeup of the community, almost every jurisdiction is subject to some kind of risk.

Considering Target Hazards

A department faces specific risks each day. You must also consider target hazards in your response area, or those you anticipate in the future. Target hazards are specific risk areas that confront your department in a rescue emergency that have a high potential for life loss or injury.

Make a list of target hazards that present special rescue challenges requiring special training and equipment to control safely and effectively.

A hazard analysis may be used to assist in the development of findings and conclusions using a scoring system based on four criteria:

1. History.
2. Vulnerability.
3. Maximum threat.
4. Probability.

History

The history or the record of previous emergencies is important in hazard analysis. A past record of incidents indicates a predisposition for the same kinds of problems to arise in the future. Unless the specific conditions that led to the problem no longer exist, or have been substantially reduced or mitigated, similar emergencies may happen again.

Vulnerability

Vulnerability includes all persons who may be killed, injured, or contaminated by an incident and all property that may be destroyed, damaged, or contaminated. Determining the number of people and the value of property in jeopardy gives useful information for assessing vulnerability. Vital facilities and population groups of special concern can be identified in vulnerability descriptions. For example, powerplants, hospitals, the aged, the handicapped, children, etc.

Maximum Threat

Maximum threat is the worst-case scenario of a hazard. In determining this factor, assume both the greatest event possible and the greatest impact (e.g., a maximum credible earthquake in an urban center on a weekday during business hours. This may also involve secondary threats such as hazmat problems, etc.).

Probability

Probability is the likelihood that an event will occur. It can be expressed as the odds that an incident may occur during a given period of time; for example, the odds are 1 in 100 that the particular event will occur in any given year. There is a correlation between historic data and probability; however, recent development of new hazardous conditions in a community may increase the probability over what would be indicated by history alone.

Rating System

A numbered weight or percentage may be given to each criterion, and a rating of low, medium, or high may be assigned to each criterion for each hazard.

The list of hazards can be ranked by the product of the criterion weights and ratings. The highest-ranking hazards should receive highest-priority consideration.

Analyzing Data

The likelihood of a technical rescue emergency is projected by developing a frequency rate. To demonstrate the likelihood of a technical rescue incident, the frequency and incident type must be shown over a given period of time in the community involved or in adjacent communities with similar problems. A "potential" collapse incident and associated hazards must be weighted heavily in the analysis.

For example, confined-space incidents may be projected in the future by estimating the number of confined spaces in future years, and then multiplying this by the current rate of incidents per confined space.

Establishing a Risk Threshold

Performing a risk/benefit analysis reflects response capability for equipment and trained personnel. It is the final determination in weighing the potential risk to the community and the potential risk to emergency responders. Each community must define an "acceptable" level of risk and must define the threshold that necessitates the formation of a special rescue team. The community and city administrators should know exactly what the fire department's rescue capabilities and limitations are, what risks confront the community, and what dangers rescuers face in performing rescues.

Determining the Type of Team (or Capability) Needed to Respond

The risk analysis should help in determining whether a team is needed. The next step is to determine the kind of team for the particular type of hazard. Will the team handle only basic rescue or will it be expected to perform complex rescues? The level of required capability must be developed. The response capability may come from within the jurisdiction, from a single agency or multiple agencies, or from mutual aid or contract from other jurisdictions or agencies in the region. Response time is a critical consideration in this assessment.

Followup To the Risk/Benefit Analysis Process

After the community risk/benefit analysis is completed, the planning process begins with developing a plan for implementation and obtaining funding support. Next, developing the team,

training, equipment, vehicles, a continuing education and maintenance program, and standard operating guidelines (SOGs) are required.

LEVELS OF OPERATIONAL CAPABILITY

Operational capability refers to different types of operations and resource deployment. They are defined in the National Fire Protection Association (NFPA) Standard 1670, *Standard on Operations and Training for Technical Search and Rescue Incidents.* This Standard establishes levels of operational capability based on the degree of hazard and jurisdictional risk assessment, the training level of personnel, and the availability of resources. Additional information can be obtained in NFPA 1006, *Standard for Technical Rescuer Professional Qualifications*, and NFPA 1951, *Standard on Protective Ensembles for Technical Rescue Incidents*.

Today, most fire departments would be able to perform at the basic and light operational levels and many at the medium level of capability. Departments need to determine their level of capability using this Standard as a guide.

Levels of operational capability should be established within each jurisdiction to conduct search-and-rescue operations safely and effectively.

Established levels are based on hazard and risk assessment, the training level of personnel, and the availability of internal and external resources.

Basic Operational Level

The basic level represents the minimum capability to conduct safe and effective search-and-rescue operations at noncollapse incidents. Personnel at this level shall be competent at surface rescue that involves minimal removal of debris and building contents to extricate easily accessible victims from uncollapsed structures.

Light Operational Level

The light level represents the minimum capability to conduct safe and effective search-and-rescue operations at structural collapse incidents involving the collapse or failure of light-frame construction, and basic rope rescue operations.

Medium Operational Level

The medium level represents the minimum capability to conduct safe and effective search-and-rescue operations at structural collapse incidents involving the collapse or failure of reinforced and unreinforced masonry (URM), concrete tilt-up, and heavy-timber construction.

Heavy Operational Level

The heavy level represents the minimum capability to conduct safe and effective search-and-rescue operations at structural collapse incidents involving the collapse or failure of reinforced concrete or steel-frame construction, and confined-space rescue operations.

Equipment lists for each of these four operational capabilities are provided in the Appendix of this manual.

Four Levels of Operational Capability--Minimum Training

Basic Operational Level

The basic operational level represents the minimum capability to operate safely and effectively at noncollapse incidents. Personnel at this level shall be competent at surface rescue and rescue involving minimal removal of debris and building contents to extricate easily-accessible victims from uncollapsed structures. Rescue operations would include removal of victims from under furniture, appliances, and the surface of a debris pile.

Light Operational Level

Personnel shall meet all basic-level training requirements. In addition, personnel shall be trained in hazard recognition, equipment use, and techniques required to operate safely and effectively at structural collapse incidents involving the collapse or failure of light-frame construction, and basic rope rescue as specified below.

Personnel shall be trained to recognize the unique hazards associated with the collapse or failure of light-frame construction. Training should include, but not be limited to, the following:

- Recognition of the building materials and structural components associated with light-frame construction.
- Recognition of unstable collapse and failure zones of light-frame ordinary construction.
- Recognition of collapse patterns and probable victim locations associated with light-frame construction.

Personnel shall have a working knowledge of the resources and procedures for performing search operations intended to locate victims who are not readily visible and who are trapped inside and beneath debris of light-frame construction. Training should include, but not be limited to, the following:

- Types of search resources: US&R dogs, optical instruments (search cameras), seismic/acoustic instruments (listening devices).

- Capabilities of search resources.

- Acquisition of search resources.

Personnel shall be trained in the procedures for performing access operations intended to reach victims trapped inside and beneath debris associated with light-frame construction. Training should include, but not be limited to, the following:

- Lifting techniques to lift structural components (walls, floors, or roofs) safely and efficiently.

- Shoring techniques to construct safe and efficient temporary structures needed to stabilize and support structural components to prevent movement of walls, floors, or roofs.

- Breaching techniques to create openings in structural components of walls, floors, or roofs safely and efficiently.

- Operating appropriate tools and equipment to accomplish the above tasks safely and efficiently.

Personnel shall be trained in the procedures for performing extrication operations involving packaging, treating, and removing victims trapped inside and beneath debris associated with light-frame construction. Training should include, but not be limited to, the following:

- Packaging victims within confined areas.

- Removing victims from elevated or below-grade areas.

- Providing initial medical treatment to victims to the Basic Life Support (BLS) level at a minimum.

- Operating appropriate tools and equipment to accomplish the above tasks safely and efficiently.

Medium Operational Level

Personnel shall meet all light-level training requirements. In addition, personnel shall be trained in hazard recognition, equipment use, and techniques required to operate safely and effectively at structural collapse incidents involving the collapse or failure of reinforced and URM, concrete tilt-up, and heavy-timber construction.

Heavy Operational Level

Personnel shall meet all medium-level training requirements. In addition, personnel shall be trained in hazard recognition, the equipment to use, and the techniques required to operate safely and effectively at structural collapse incidents involving the collapse or failure of reinforced concrete or steel-frame construction, and confined-space rescue.

RESCUE SKILLS

Generally, rescue skills needed or performed in structural collapse incidents correspond to the type of victim entrapment.

- About 50 percent of injured victims (not trapped) are rescued by spontaneous volunteer rescuers.
- About 30 percent of victims in nonstructural and light entrapment may be rescued by trained community teams (Community Emergency Response Teams (CERTs)).
- About 15 percent of victims entrapped in structural collapse void spaces are rescued by emergency service providers.
- About 5 percent of victims entombed in a structural collapse are rescued by specialized heavy-rescue teams.

Emergency responders must be able to control spontaneous volunteers who may be working at the scene upon the arrival of the emergency responders.

Supervising volunteers involves ensuring that certain basic procedures are followed:

- The incident or each situation is isolated.
- All information is evaluated.
- Tasks are delegated.
- Needs are communicated.

The safety of the volunteer workers is of primary importance, and should not be compromised.

NATIONAL FIRE PROTECTION ASSOCIATION STANDARD 1670

NFPA 1670 pertains to levels of functional capability for conducting operations safely and effectively at technical rescue incidents, including structural collapse. Standards for levels of proficiency have been developed, ranging from awareness to operations to technician. Each level has increasing operational requirements and functions.

RESCUE RESOURCES

Introduction

Fire departments across the United States have assumed a major role as primary responders to rescue incidents that involve, among other things, structural collapse, trench cave-ins, confined spaces, industrial and agricultural machinery, water emergencies, and people trapped above- or below-grade level. These emergencies are grouped into a category called technical rescue. Technical rescue incidents are often complex, requiring specially trained personnel and special equipment to complete the mission. Natural forces such as earthquakes, rain, temperature extremes, and swift water currents often complicate technical rescue incidents. The presence of flammable vapors and toxic chemicals can also increase the level of risk. The safety of crews conducting technical rescue operations is of special concern.

Fire and rescue departments throughout the country perform technical rescues on a daily basis. Some complex technical rescue incidents last many hours or even days, as rescue personnel assess the situation carefully, obtain and set up the appropriate rescue equipment, monitor scene safety, and remove hazards before they can finally reach, stabilize, and extricate the victims. The presence of hazards such as flammable vapors or dust often force rescuers to take additional precautions and time to ensure that operations are conducted safely. Experience has shown that hasty rescue operations can endanger the lives of both rescuers and victims. At the same time, rescuers know that a victim's survival chances often depend on quick extrication and transportation to a hospital.

Some departments are better prepared than others to perform technical rescue operations. To deal with these complicated rescue operations, many fire departments have created special technical rescue teams. A technical rescue team is a specialized group of personnel having advanced training and special equipment to conduct specialized rescue operations safely and efficiently. The specialties and capabilities of individual teams vary greatly, depending on their level of training, number of trained personnel, and availability of specialized rescue tools and equipment. For example, some departments have the training and equipment to perform rescues at collapsed structures by cutting through concrete and removing heavy debris, while other departments are limited to working with picks and shovels to remove debris.

Many departments have single-discipline rescue teams, for example, a trench rescue team. These teams are trained and equipped to handle one type of rescue. Other departments have multidiscipline teams that are prepared to perform more than one type of rescue.

The formation of a technical rescue team, whether single-discipline or multidiscipline, requires careful planning, a long time commitment from the team members, equipment research and acquisition, risk analysis, training, and funding.

Technical Rescue Capabilities

Confined-Space Rescue

A confined space is an enclosed area with limited entry or egress, which has an internal configuration not designed for human occupancy, such that an entrant could become trapped or asphyxiated. It may have inwardly converging walls, or a floor that slopes downward and tapers to a smaller cross-section. These spaces include sewers, vats, caves, tanks, and other areas. Rescues from such spaces are dangerous, especially if the interior environment is toxic or oxygen-deficient. OSHA terms these dangerous areas "permit-required confined spaces." OSHA estimates that there are over 240,000 such permit-required spaces across the United States.

Collapse Rescue

Collapse rescue involves building collapse or other structural collapse, such as the collapse of various buildings in the 1994 Northridge, California earthquake or the collapse of the elevated highway in Oakland, California during the 1989 Loma Prieta earthquake. Many collapse-rescue teams have been established in earthquake-prone areas. A collapse-rescue capability is a necessity in most parts of the country, with both natural and human-caused collapses occurring with regularity. Recent disasters and acts of terrorism such as the 1995 Oklahoma City bombing and the September 11, 2001, attacks on New York and the Pentagon have increased the need for heavy-rescue capability.

Trench/Cave-In Rescue

Trench or cave-in rescue can occur in almost any jurisdiction across the country. Trenches are often found in areas of new construction, where pipes or cables are being buried or excavated for new construction footing and foundation work. The most common trench-rescue scenario involves rescuing a construction worker trapped when the trench walls collapse.

Rope Rescue

High-angle or low-angle rescues occur around cliffs, ravines, caves, mountainous areas, or highrise buildings, communication towers, water towers, or silos. These rescues may require complex rope and hauling systems to secure personnel and extricate victims safely.

Industrial Rescue

Industrial machinery presents many challenges to rescuers. Many industrial rescues involve confined spaces or heavy-rescue extrication to free victims trapped by machinery.

Structural Collapse Resources

Many different kinds of resources from both the government and the private sector are available for response to structural collapses.

- local jurisdictions;
- local and State governments;
- Federal governments (FEMA);
- members of the private sector;
- trained civilian volunteers;
- State US&R Task Forces; and
- FEMA US&R Task Forces.

Each resource may have varying capabilities and functions for the broad scope of search-and-rescue requirements. The key to effective resource use is to match the right resource to the job. This becomes problematic when dealing with difficult rescue situations where a very high level of capability is needed, because of the scarcity of these resources throughout the country.

Government Levels of Response

Government response can occur at the following levels:

- local;
- regional;
- State;
- Federal; and
- international.

Government resources may consist of fire department engine, truck, and heavy-rescue companies; specialized US&R companies and squads; confined-space teams; high-angle rescue teams; technical rescue teams; canine search teams; technical search teams; State and FEMA US&R task forces; and specialized medical teams. Most of these resources come from the fire service, but other agencies (such as public works departments and law enforcement) may also have such specialized resources to offer.

Support resources may include hazmat teams, emergency medical services (EMS) responders, public works departments, law enforcement, the military, the Army Corps of Engineers, and technical specialists such as structural engineers.

The National Urban Search and Rescue System

The National US&R Response System, established under the authority of FEMA in 1989, is a framework for structuring local emergency services personnel into integrated disaster response task forces. These task forces, complete with the necessary tools and equipment and skills and techniques, can be deployed by FEMA to rescue victims of structural collapse.

When the Federal government mobilizes resources and conducts activities to support State and local response efforts to disasters, it does so under 12 Emergency Support Functions (ESFs). Each ESF is led by a primary agency which has been selected based on its authorities, resources, and capabilities in a particular functional area. FEMA is the primary agency for ESF #9, US&R.

After a request for Federal assistance from a governor is received and approved by the President, task forces may be activated or placed on alert to respond to a major disaster. The alerted task forces start locating personnel and organizing their mobilization. Each task force can be airborne and heading to its destination in a matter of hours.

Currently, there are 28 FEMA US&R Task Forces spread throughout the continental United States. These task forces are trained and equipped by FEMA to handle structural collapse, and they encompass local emergency service personnel from 18 States. Any operational task force can be deployed by FEMA to a major disaster to provide assistance with structural rescue. Two task forces have also responded to several international disasters under the auspices of the U.S. Agency for International Development, Office of Foreign Disaster Assistance.

A FEMA US&R Task Force is comprised of 72 specialists and is divided into four major functional elements:

1. Search.
2. Rescue.
3. Technical.
4. Medical.

Task force members include structural engineers and specialists in the areas of hazardous materials, heavy rigging, search (including highly-trained search dogs), logistics, rescue, and medicine. By design, there are two task force members assigned to each position, to allow rotation and relief of personnel during round-the-clock task force operations.

Each task force is supported by a comprehensive equipment cache weighing in total over 58,000 pounds. The cache elements sent to the disaster scene include communications, locating devices, rope, rigging, hauling, lifting, and pulling equipment. Shoring, structural movement sensing, victim extrication, cutting, and drilling devices are included to perform the often-difficult assignments encountered by a FEMA US&R Task Force.

The medical team is comprised of four medical specialists and two physicians. Many of the medical specialists on US&R teams are both paramedics and firefighters and, thus, have both rescue experience and extensive experience in prehospital medical care. Most of the physicians involved in US&R are emergency medicine specialists and have also taken special courses in confined-space medicine and crush syndrome.

The medical team is designed to bring the emergency department out to the field. It carries all of the Advanced Life Support (ALS) equipment available in any ALS ambulance. In addition to providing advanced emergency medical care in the field, it has training in hazardous materials, public health issues relevant to disaster management, and other issues important to the function of a US&R team.

Task Force Capabilities

Task force capabilities include the following:

- physical search-and-rescue operations in damaged or collapsed structures;
- emergency medical care for entrapped victims, task force personnel, and search canines;
- reconnaissance to assess damages and needs and to provide feedback to local, State, and Federal officials;
- assessment and shutoff of utilities to houses and other buildings;
- hazardous materials survey and evaluations;
- structural and hazard evaluations of buildings needed for immediate occupancy to support disaster relief operations; and
- stabilizing damaged structures, including shoring and cribbing operations on damaged buildings.

Figure 3-1 illustrates the organization of a typical 24-hour, State/National US&R task force.

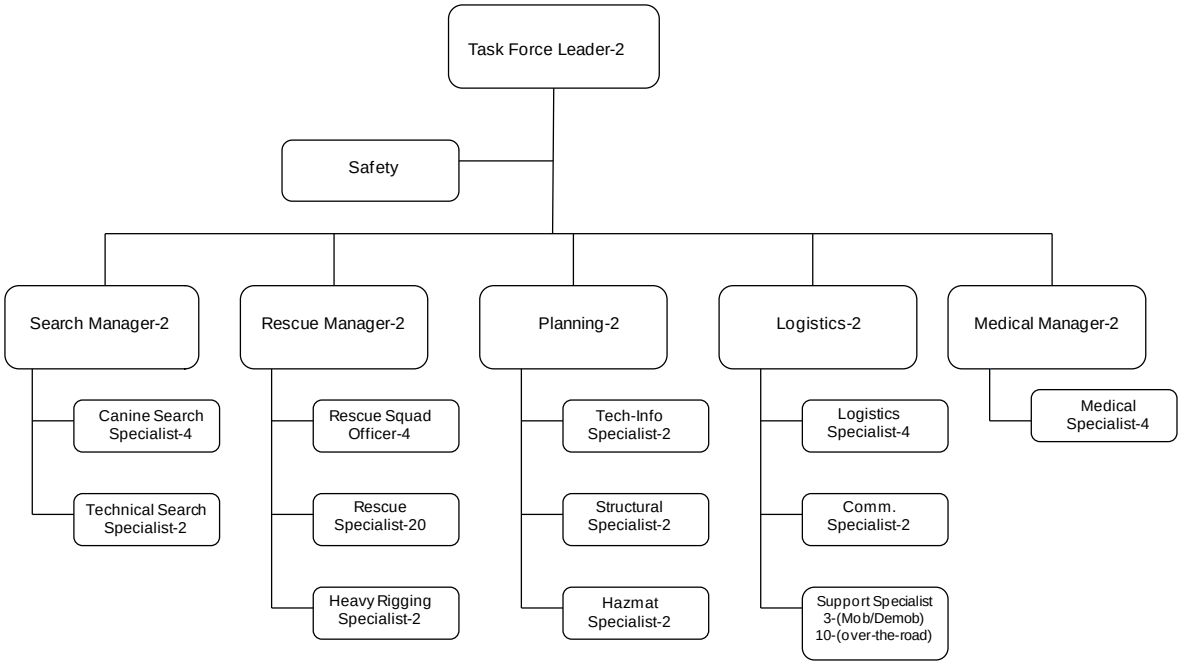

Figure 3-1
US&R State/National Task Force

Private-Sector Resources

Private-sector resources can provide resources such as construction and demolition contractors (with heavy equipment and various technical specialists), search dogs and handlers, structural engineers, trained volunteer and industry teams (e.g., confined space, high-angle rope rescue, technical search), EMS providers, equipment rental and supply companies, utility companies, and trained community volunteers (CERTs).

It is important to know what resources are available from the private sector in each jurisdiction. A survey of these resources needs to be conducted as part of the response planning process in each agency with responsibility for structural collapse or technical rescue.

Resource Typing

The State of California has developed a US&R resource typing system. Resource typing increases the effectiveness of the IC by providing specified levels of capability for a given objective and task assignment. The system has been developed using the four levels of capability (basic, light, medium, and heavy) with specified minimum levels of staffing and equipment. Resources are categorized as:

- US&R company;
- US&R crew; and
- State/National task forces.

The type of resource describes the performance capability. For example, a Type 1 US&R resource has more capability than a Type 2 (see Table 3-1). Resources are usually typed by a number, with 1 being the highest capability. The highest available capability, however, is not necessarily the right resource for the job at hand. For example, a Type 1 heavy-rescue company with the greatest capability may be available, but for a wooden structure collapse, a Type 2 medium or Type 3 light-rescue capability would be more suitable to accomplish the search-and-rescue operation.

Table 3-1
Urban Search and Rescue Resources

Always use the prefix US&R for Urban Search and Rescue resources. Order Single Resource or Strike Team by Type (Capability--Heavy, Medium, Light, or Basic).

Type NFPA (Capability)	Type 1 (Heavy) Technician*	Type 2 (Medium) Operations*	Type 3 (Light) Operations*	Type 4 (Basic) Awareness*
	• Reinforced concrete • Steel structure • Confined-space rescue	• Reinforced and URM tiltup construction • Heavy timber	• Light-frame construction • Basic rope rescue	• Surface rescue • Nonstructural entrapment in noncollapsed structure(s)

Resource	Radio	Component	Types			
			1	2	3	4
US&R company	US&R company (Phonetic)	Equipment Personal equipment	Heavy Inventory 6**	Medium Inventory 4**	Light Inventory 3**	Basic Inventory 3**
US&R crew***	US&R crew (Phonetic)	Personnel trained to appropriate level Supervision transportation	6	6	6	6
State/National US&R task force	Preassigned two-letter State task force designator and number identifier (CA-TF5)	Equipment Personnel transportation	US&R Task Forces are comprised of 62 people specifically trained and equipped for large or complex urban search-and-rescue operations. The multidisciplinary organization command, search, rescue, medical, and technical.			

*Compliance with NFPA 1670.
**Requests should include vehicle capabilities when necessary (e.g., four-wheel drive, off-road truck, engine, etc.).
***The agency/department sending a US&R crew will identify the supervisor.

There are three distinct advantages to typing resources:

1. In planning.

   Knowing the specific capabilities of the various kinds of resources helps planners decide the type and quantity of resources best suited to perform activities required by the Incident Action Plan (IAP).

2. In ordering.

   Ordering resources by type saves time, minimizes error, gives a clear indication of exactly what is needed, and reduces nonessential communications between the incident and the offsite ordering point (dispatch center).

3. In monitoring resource use.

   An awareness of the type of tactical resource assigned enables the IC or Operations Chief to monitor for under- or overcapability, and to make changes accordingly. Careful monitoring of resource performance can lead to the use of smaller or less costly resources, which can result in increased work performance and reduced cost.

Table 3-2 shows types of resources that can be combined into strike teams.

Table 3-2
Strike Team Types and Minimum Standards

Kind	Strike Team Types	Number/ Type	Minimum Task Capabilities	Strike Team Leader	Per Single Resource	Total Personnel
US&R Company	AR	2-Type 1 (Heavy)	Vehicle(s) equipped for reinforced concrete, steel structures, confined-space rescue	1	6	13
	BR	2-Type 2 (Medium)	Vehicle(s) equipped for reinforced and unreinforced masonry, tilt-up construction, heavy timber	1	4	9
	CR	5-Type 3 (Light)	Vehicle(s) equipped for light-frame construction and basic rope rescue	1	3	16
	DR	5-Type 4 (Basic)	Vehicle(s) equipped for surface rescue and nonstructural entrapment in noncollapsed structures	1	3	16
US&R Crew	GR	3-Type 1 (Heavy)	Trained for reinforced concrete, steel structures, confined-space rescue	1	6	19
	HR	3-Type 2 (Medium)	Trained for reinforced and unreinforced masonry, tiltup construction, heavy timber	1	6	19
	IR	3-Type 3 (Light)	Trained for light-frame construction and basic rope rescue	1	6	19
	JR	3-Type 4 (Basic)	Trained for surface rescue and nonstructural entrapment in noncollapsed structures	1	6	19

Tiered-Response System

A concept called "tiered response" is used by many rescue agencies across the country. The concept is to train and equip personnel or units throughout a department to different response levels, or tiers, from a basic rescue level to an advanced rescue capability.

The basic premise of a tiered-response system begins with training all personnel to a basic-rescue awareness level that familiarizes them with rescue hazards, dangers, and some basic, practical rescue skills. In the event of a complicated rescue, they will request the response of an advanced team and initiate measures within their capabilities until the advanced team arrives. This tiered-response system for technical rescue is similar to a tiered EMS response system that uses a basic emergency medical technician (EMT) to initiate care until a paramedic arrives on the scene, or the similar system used for the hazmat responses.

As an example, Los Angeles uses this approach for water rescue. All of its engine and truck companies are trained and equipped to handle a basic water rescue incident. For a more complicated situation, engine company personnel are trained and equipped to initiate basic rescue measures until the advanced water rescue team arrives.

At the top of the tier in US&R capability are the FEMA and State US&R Task Forces with mobile, multifunctional, 62-person teams equipped for the most complex and diversified rescue operations, yet reliant on support for transportation and sustained operations (beyond 72 hours) in the field. For many reasons, including cost, there are limitations on how many task forces can be fully developed. Therefore, a regional response capability is needed to provide the initial and more rapid response to various types of technical rescues, no matter how complex they may be.

The first level of response is the spontaneous "rescuer." Civilian volunteers, who are normally the first responders, can be trained to perform basic search-and-rescue operations, such as the CERTs trained in Los Angeles and many other cities and counties throughout the country. The second level, light search and rescue, and third level, medium search and rescue, are made up of trained and equipped fire and rescue agencies.

The regionalization of US&R resources usually allows the formation and response of specialized teams that can perform at the medium or heavy level of response. The FEMA and State Task Forces and properly equipped and staffed search-and-rescue companies fall into this category, using NFPA 1670 as a guide to levels of capability.

There are several advantages to a tiered-response system:

- It provides basic rescue training for all personnel.
- All potential rescuers become more aware of the dangers of different situations and recognize situations that are beyond their capabilities.
- A smaller number of personnel can develop a high level of expertise in a particular area.

- The system fits in well with a regional rescue response system where the personnel with basic training can handle a basic incident on their own and have the option of calling an advanced regional rescue team for assistance.

- It eliminates the expense and time required to equip and train all personnel to an advanced rescue level.

Table 3-3 illustrates an **example** of **possible** units and capabilities that may be associated during a tiered rescue response.

Table 3-3
Tiered Response Example

Tier Response Level	Units	Capabilities
Level 4	Engine company	Light rescue (Awareness level)
Level 3	Truck company	Medium rescue (Operational level)
Level 2	Heavy-rescue company	Heavy rescue (Technician Level)
Level 1	US&R task force	Heavy rescue including search, medical, technical, and support components (Technician Level)

Regionalized Urban Search and Rescue Response

Successful regionalized response systems have been developed through good planning, innovation, standardization, and the cooperation of many agencies and their chiefs. These efforts have resulted in an effective rescue response system using specialized resources through mutual-aid or cooperative agreements to provide the level of response required for the risks in each of the communities involved in the system.

Personnel from various agencies with the appropriate level of training can be brought together with the tools, equipment, supplies, and vehicles to respond as a crew, squad, team, or task force for rescue incidents within the region using standardized operational procedures under an incident command and coordination system.

Developing a Regionalized Response

Developing a regionalized response requires a systematic approach, a good plan, and initial agreements to proceed between the chiefs or administrators of the potential agencies involved.

Assuming that a risk assessment has been performed and a need requirement established, department administrators should agree to a cooperative planning effort consisting of the following:

- establishment of a planning committee;
- determination of current and required capabilities;
- preparation of an operational plan;
- determination of a program management structure;
- development of standards on personnel, staffing, training, equipment, and response;
- estimation of initial and ongoing costs and identification of funding sources; and
- development of response agreements (i.e., automatic or mutual aid, cooperative agreements, etc.).

Many fire departments across the country have established effective regional response systems. The State of California, Office of Emergency Services, coordinates the US&R statewide mutual-aid system which is based on a regional response of the nearest appropriate resource. Most of the FEMA US&R Task Forces are composed of personnel and equipment from a combination of agencies and organizations. Other examples include

- The Tidewater Regional Heavy and Tactical Rescue Team from southeast Virginia.

- The Metrocrest Specialty Response Team from the Dallas/Fort Worth Metro Region, northcentral Texas.

- The Combined Agency Response Team from Illinois.

- The Miami Valley, Ohio, US&R program.

- The St. Louis, Missouri Regional Area Technical Rescue Team.

Other systems too numerous to mention are today functioning effectively or are in the formation stages, whereas just a few years ago, this was not the case.

Effective regionalization requires people to focus on their mission and on their ability to respond to the special needs of the citizens they protect. It is time to drop the egos, look beyond your "turf," and make the commitment to work together with the best resources that each cooperating agency has to offer.

The fire service has acknowledged the need to provide a specialized rescue capability to the community it serves.

Where will we be in the next century? In some people's opinion, we will continue to improve our technical rescue capability through cooperation and support from all levels of government, the private sector, and the community, through the use of improved tools and equipment to do our job more effectively, and through increased training in the complexities of technical rescue.

Our goal is to arrive quickly with the right people and equipment to perform the rescue operation safely, effectively, and efficiently.

Activity 3.1

Community Risk Analysis

Purpose

To be able to identify structural collapse hazards, resource capabilities, and needs within a community.

Directions

1. Turn to the Technical Rescue Risk/Hazard and Capability Analysis Matrix.

2. Your instructor will review the form.

3. Using information from your own community, complete the columns titled "Capability" and "Requirement."

4. The "Requirement" column of the chart should reflect the resources listed in Tables 3-1 and 3-2. The "Capability" column of the chart is a list of what students have available to address these specific hazards.

5. This activity may also be completed in small groups, at the discretion of the instructor.

6. Several students will be asked to report their answers to the class.

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Activity 3.1 (cont'd)

Technical Rescue Risk/Hazard and Capability Analysis Matrix

Risk	Hazard	Capability	Requirement
Earthquake, hurricane, tornado	Collapse, confined space, extrication, rope rescue		
Flood, river, lake	Water, ice rescue		
Mountains, cliffs	Rope rescue, landslide		
New construction	Collapse, confined space		
Old structures	Collapse, confined space		
Fire, explosion	Collapse extrication		
Highrise	Collapse, confined space, rope rescue		
Industrial	Confined-space extrication		
Petro/Chemical, hazmat	Confined space, hazmat		
Agricultural	Extrication		
Wells, caves, tunnels, subways	Confined space, extrication, rope rescue		
Tanks, cesspools, excavations	Confined space, rope rescue		

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NOTE-TAKING GUIDE

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NOTE-TAKING GUIDE

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Unit 3:
Response Resource Capabilities

Slide 3-1

Slide 3-2

Terminal Objective

The students will be able to identify various resource levels, types, and capabilities used for structural collapse incidents.

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Slide 3-3

Enabling Objectives

The students will:

- **Define the types and levels of structural collapse risks within a jurisdiction.**
- **Define various levels of capability for a structural collapse incident.**
- **Describe resources available through local, State, and Federal agencies.**

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Slide 3-4

Introduction

The Incident Commander (IC) must be able to:

- **Identify the type of collapse**
- **Identify rescuer and victim hazards**
- **Match appropriate level of rescue capability to the problem**
- **Determine, manage, and coordinate resources**

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Slide 3-5

Levels of Capability/Resources

- **Spontaneous volunteers**
- **Federal Emergency Management Agency (FEMA) National Urban Search and Rescue (US&R) Task Forces**
- **Other agencies**

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Slide 3-6

Risk/Hazard Analysis

It is important that each department identify and understand its collapsed-structure response capabilities.

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Risk/Hazard Analysis (cont'd)

Process:
- **Perform risk/hazard analysis**
- **Consider target hazards**
- **Analyze data**
- **Establish a risk threshold**
- **Determine team type and capability needed**

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Slide 3-8

Operational Capability

This term refers to the different types of operations and resource deployment possible.

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Slide 3-9

Operational Capability (cont'd)

Levels consist of:
- **Basic**
- **Light**
- **Medium**
- **Heavy**
  – **These levels correspond with National Fire Protection Association (NFPA) 1670, *Standard on Operations and Training for Technical Search and Rescue Incidents***

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Class "Brainstorm" Session

- **Government resources**
- **Private-sector resources**

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Qualified Operators

Slide 3-11

Slide 3-12

Rescue Resources

Available from:

- **Local jurisdictions**
- **Local and State governments**
- **Federal government (FEMA)**
- **Private sector**
- **Trained civilian volunteers**
- **FEMA US&R Task Forces**

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Video:
"National Urban Search and Rescue Response System"

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Tiered Response System

- **Used by fire departments for emergency medical services (EMS) and hazmat response**
- **Also used effectively for structural-collapse response**

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Slide 3-25

Tier Level 4

Engine Company--Light Rescue Capability

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Tier Level 3

Truck Company--Medium Rescue Capability

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Tier Level 2

Heavy Rescue Company--Heavy Rescue Capability

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Slide 3-29

Other Agencies

Coordination occurs at:

- **The incident (IC and agency representative(s))**
- **Department dispatch center or department operating center**
- **Local Emergency Operations Center (EOC)**
- **City level (mayor)**
- **County EOC**
- **State multiagency coordination system and EOC**
- **Federal coordinating system**

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Activity 3.1
Community Risk Analysis

Slide 3-30

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Summary

- **A risk/hazard analysis is needed for each community.**
- **Levels of operational capability and resource typing assist in developing specific response requirements.**
- **Structural collapse resources are available from all levels of government and from the private sector.**
- **Coordination of responding agencies is critical to an effective Incident Command System (ICS) for structural collapse incidents.**

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UNIT 4: SCENE MANAGEMENT: FACTORS AND ISSUES

TERMINAL OBJECTIVE

The students will be able to identify critical factors and issues that affect structural collapse scene management.

ENABLING OBJECTIVES

The students will:

1. *Identify factors associated with rapid scene assessment.*
2. *Identify life safety issues.*
3. *Identify key elements of scene control.*
4. *Explain the importance of establishing appropriate incident facilities.*
5. *Describe the potential effects and consequences of the incident on and for the community.*

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INTRODUCTION

The initial actions taken by the Incident Commander (IC) set the tone for the incident. The initial sizeup and structural triage provide information needed to do the following:

- Develop the action plan.

  - Sizeup provides the information needed to develop the Incident Action Plan (IAP).

  - Structural triage helps identify and prioritize the rescue areas with the highest probability of success.

  - Many factors regarding the collapsed structure incident must be considered to develop a rescue operational plan, objectives, priorities, Command organization, and resource requirements.

- Provide for the safety of both rescuers and victims.

  - The IC should initiate the risk management process to determine the safe commitment of resources.

  - A personnel accountability system should be used to ensure rescuer safety.

  - Hazards and dangerous working conditions may be reduced or eliminated through effective incident management.

- Increase operational effectiveness.

  - Scene control must be initiated early to establish a safe and functional worksite.

INITIAL SCENE ASSESSMENT

Many factors must be dealt with when the IC arrives at an incident and attempts to size up the situation and begin operations. Incident personnel may need to perform the following activities prior to beginning structural collapse operations:

- Identify buildings individually (i.e., by address, physical location, unique design, etc.).

- Perform general area triage to identify which buildings among many in the given area offer the highest potential for viable rescue opportunities.

- Assess and mark hazards prior to search-and-rescue operations in any specific building.

- Mark particular buildings for search and rescue.

At least two possible situations exist when emergency responders arrive.

1. Civilians may have already identified viable search or rescue opportunities. This information greatly reduces the number of considerations that the IC must address. The IC must keep in mind the following factors:

    a. The location and identification of separate buildings may be marked clearly by volunteers.

    b. Many other general sizeup activities may have been performed by the local volunteers. The IC may base the action plan and assignment of resources on this information.

    c. Information provided by local sources must be reviewed for validity. **The IC should not accept information as fact (when approached by local civilians reporting entrapped victims), but rather should have a complete assessment of the overall situation verified by a team manager or Company Officer (CO), or by personal observation.**

2. There may be little or no reconnaissance information available when the IC arrives.

    a. The IC may be responsible for a geographic area (several buildings, part of a block, several-block area) with no solid information as to where to concentrate efforts. In this case, the sizeup of the situation and the decision making process become much more complex.

    b. If no search or rescue requirements are identified immediately, search priorities should be determined based upon victim entrapment in high-probability occupancies such as schools, hospitals, multiresidence buildings, etc. (see Structural Triage).

INCIDENT EMERGENCY MANAGEMENT PLANNING PHASES

An IC may be faced with something as simple as a single-site incident (i.e., one building or a single rescue within a building), or something as complex as multisite devastation.

Depending upon the size and extent of the devastation, the IC may be faced with situations that require immediate decisions regarding the implementation of the operational plan. This initial plan is developed from the sizeup and the assessment of the incident is continuous throughout the incident.

Once the initial assessment is underway, the IC must begin to identify the overall mission objectives, which should include

- assessing general situation at the designated rescue site(s);
- developing initial plan (objectives and strategies);
- assigning resources;

- managing ongoing operations; and
- following up on the progress and make adjustments to the plan.

IAPs follow the phases of response from small incidents through large, complex incidents to demobilization:

3. Initial response plan.

    a. Perform sizeup.

    b. Develop initial plan (objectives and priorities).

    c. Request and/or assign resources.

    d. Develop organization.

    e. Evaluate operations.

4. Expanded response (use Incident Command System (ICS) 201 Form).

    a. Perform sizeup.

    b. Develop objectives and strategies.

    c. Request and assign resources.

    d. Provide logistical support.

    e. Expand the organization.

    f. Evaluate operations.

5. Extended response (use written IAP).

    a. Perform sizeup.

    b. Develop objectives and strategies.

    c. Request and assign resources.

    d. Provide logistical support.

    e. Expand the organization.

    f. Add to IAP as needed (safety, medical, transportation plans, etc.).

    g. Evaluate operations.

6. Demobilization (continue IAP).

    a. Perform sizeup.

    b. Develop objectives and strategies.

    c. Assign and release resources.

    d. Provide logistical support.

    e. Reduce the organization.

    f. Evaluate operations.

    g. Provide Critical Incident Stress Management (CISM).

    h. Collect all records.

    i. Secure site and release all resources.

Sizeup

Sizeup involves obtaining information about the incident so that a plan can be developed.

The sizeup should include

- the problem's cause (how the structure collapsed);
- hazards involved (i.e., additional collapse, fire, hazmat, utilities, flooding, dust, toxic or flammable atmosphere, etc.);
- incident conditions (i.e., structural stability, time, weather, access);
- victims (how many, as well as their location, number, and degree of rescue difficulty); and
- internal or external exposures.

Appendix G contains a Structural Collapse Scene Assessment Checklist. This form is especially useful during initial sizeup and development of a response plan.

The sizeup of the collapsed structure and victim potential is much like the sizeup of a structure fire. Consideration must be given to the risk to the rescuer versus the benefit of rescuing a victim.

Sizeup Considerations

The following sizeup considerations must be addressed when assessing a rescue problem.

Time

The time of day is an important aspect when attempting to locate possible victims. In a residential structure during nighttime hours, victims may be found where bedrooms were located. At other times of the day, residential structures may have less of an occupant load. Commercial buildings may be virtually empty at night, but their occupancy grows exponentially during business hours.

The time of day may also influence the amount and type of other agency resources that may be available to assist in rescue operations.

Occupancy

The occupancy type (residential, commercial, industrial) plays an important role in the sizeup of a collapsed building. The occupancy type, coupled with the time factor, yields valuable information about occupant load at the time of collapse.

Age/Era of Structure Construction

The age of a building and the era in which it was constructed are important factors. The construction era of a building may reveal whether retrofit ordinances were adopted to make up for original building flaws. Understanding the age of a building and the possible retrofit programs to which it may have been subjected aids rescue workers greatly in making a safe rescue. It cannot be overstressed that unreinforced masonry (URM) buildings, having been through a retrofit program, are still **unreinforced** buildings. Particular attention must be paid to ensuring rescuer safety prior to attempting rescues in these types of buildings.

Load Shift (Previous versus Current Load)

When a building has partially collapsed, rescuers may be lulled into a false sense of security that the building will not collapse further. The previous structural load was along an axial plane as designed and built prior to collapse, but partial collapse of the building may now have spread the load as an eccentric load. Other parts of the structure may be applying a torsional load, making further collapse of the structure likely in an aftershock, during debris removal, or possibly during normal rescue operations.

During shoring operations, care must be taken to shore the structure in the location in which it is resting. Shoring should not be used to try to push the building back to its original position. Shoring only attempts to distribute the unequal load of the building equally back to the earth.

Construction

Different construction types have different inherent strengths and weaknesses. Ordinary construction, wood frame, and stucco offer the highest rescue potential because of the materials involved. In many cases, wood from a collapsed portion of the structure may be used for shoring

prior to attempting rescue. This type of construction is also easily penetrated using normal truck company tools. Because of its mass and strength, heavy reinforced concrete provides the biggest challenge for the rescuer attempting to cut, break, breach, and shore.

Each type of building construction and building technique produces its own characteristic collapse patterns. Knowledge of construction type, construction techniques, and collapse patterns assists responders in assessing the existence of void spaces and victim survival.

Risk Calculations

Collapse patterns, secondary collapse potential, utilities, and potential hazardous material situations influence the risk-versus-gain calculation that must be made prior to rescue attempts. Rescuer safety is paramount and cannot be overstressed.

As with any sizeup, consider the following items when making initial risk calculations:

- placement of apparatus;
- placement of equipment;
- placement of personnel (keep only essential personnel in hazard areas); and
- placement of support functions for safety and ease of work.

Plan on secondary collapse. Have escape routes planned and make them known. Use all available safety equipment. Appoint a person to act as Safety Officer (SO) and give that person the authority to stop actions deemed unsafe. Appoint a person or persons to recon the area continually for additional signs of potential secondary collapse and additional hazards, such as utilities or hazardous materials that may not have been recognized at the start of rescue operations. Consider surface rescues of partially trapped victims before attempting more time-consuming rescue operations.

A collapsed structure with victims trapped and their location known may be an extremely emotional situation. Do not allow your emotions or the emotions of someone on your team to go unchecked. Use your head!

Remember, for every action, there may be an equal and opposite reaction. So slow down and think things out. Rescuer safety is your number one priority.

Each type of structure has unique characteristics that present different problems and advantages for rescuers in a collapse. In the event of failure, entire walls may fall, creating large piles of bricks or building debris, possibly trapping people on sidewalks and in automobiles. Roofs and floors may collapse completely, forming voids that may enclose trapped victims.

The problems of identifying hazards after structural collapse are extremely difficult. Buildings are often complicated and there are many different types and configurations. After the event triggering the collapse ends, the danger of further collapse is often still present. Brittle conditions pose one of the greatest threats because of the probability of sudden failure. As many hazards as possible should be identified and risk factors should be assigned to them. Measures to avoid and mitigate the danger can then be factored into the overall search-and-rescue effort.

How you proceed will depend on the amount of preplanning that has been done, how well your personnel are trained, and the resources available to effect the rescue. Search and rescue in a collapsed building is dangerous. Take your time, shore and support the structure as you proceed, and keep your wits about you; your survival depends on it and it all starts with the sizeup.

Building Construction Type

There are four general types of building construction. It is important for responders to understand these types in order for them to make an accurate assessment of the hazards, the rescue possibilities, and the types of resources needed for the operation. The construction types and occupancy of structures determine the use of a variety of different techniques and materials. The four general construction categories that rescuers will most likely encounter in collapse situations are light frame, heavy wall, heavy floor, and precast concrete construction.

Light-Frame Construction

Materials are generally lightweight and provide a high degree of flexibility to applied forces such as earthquakes, hurricanes, and tornadoes. Typically, these structures are built with a skeletal structural frame system of wood or light-gauge steel components that provide support to the floor or roof assemblies. Examples of this construction type are wood-frame structures used for private residences, lowrise multiple occupancies, and light commercial occupancies up to four stories high. Light-gauge steel-frame buildings include commercial business and light manufacturing occupancies and facilities.

Heavy-Wall Construction

Generally, materials are heavy and are employed in an interdependent structural or monolithic system. These types of materials and their assemblies tend to make the structural system inherently rigid. This construction type does not usually use a skeletal structural frame. It uses a heavy-wall support and assembly system to provide support for the floors and roof assemblies. Occupancies using tilt-up concrete construction are typically one to three stories high and consist of multiple monolithic concrete wall-panel assemblies. They also use an interdependent girder, column, and beam system to provide lateral wall support of floor and roof assemblies. Occupancies are typically commercial, mercantile, and industrial. Other examples of this type of construction include reinforced and URM buildings that are one to six stories high for any type of occupancy.

Heavy-Floor Construction

Structures of this type are built using cast-in-place concrete construction consisting of flat slab panel, waffle, or two-way concrete slab assemblies. Pretensioned or posttensioned reinforcing steel rebar or cable systems are common components for structural integrity. The vertical

structural supports include integrated concrete columns, concrete enclosed, or steel frame that carry the load of all floor and roof assemblies. This type includes heavy-timber construction that may use steel rods for reinforcing. Examples of this type of construction include offices, schools, apartments, hospitals, parking structures, and multipurpose facilities. Heights vary from single story to highrise.

Precast Construction

Structures of this type are built using modular precast concrete components that include floors, walls, columns, and other subcomponents that are field-connected upon placement onsite. Individual concrete components use embedded steel reinforcing rods and welded wire mesh for structural integrity. Steel beam, column, or concrete framing systems may be used for the overall structural assembly and building enclosure. These structures rely on single or multipoint connections for floor and wall enclosure assembly and are a safety and operational concern during collapse operations. Examples of this type of construction include commercial, mercantile, office, and multiuse or multifunction structures, including parking structures and large-occupancy facilities.

Construction Techniques

Light Frame--Wood and Stucco

Wood is tough, lightweight, and fire-supporting. Wood performs well when nailed with many connections, as long as splitting is avoided. Connections can be bolted. Plywood sheathing of wood structures makes them very tough and resistant to earthquakes, as long as the sheathing is nailed properly. Wood-frame buildings are seen in single-family dwellings and buildings of up to four stories. They also include older balloon-frame structures and nonuniform buildings, which are corner- or odd-shaped buildings (E-, H-, L-, T-, or U-shaped).

Problems with these buildings include slipping of foundations and failure of chimneys, air conditioners, and facades. In odd-shaped buildings, cracks or separations occur at the overstressed inside corners. The more plywood shear panels used in construction, the less the damage seen.

Masonry Construction

URM construction exists throughout the world. Even in earthquake-prone California, there are approximately 40–50,000 URM buildings--and 7–8,000 URM buildings in Los Angeles alone. Walls are made from three or more bricks laid lengthwise, side-by-side, for four to seven courses, and then a course with bricks at 90 degrees. The 90-degree brick course is called a king's row or header row. Other recognition factors include arched windows, steel plates or concrete lintels over door and window openings, and thick walls and door openings. Lime and sand mortar is placed between the bricks. The strength and seismic resistance of unreinforced masonry is highly dependent on the mortar strength. The shear strength of mortar can vary from

15 pounds per square inch (psi) to over 150 psi; it is determined by the proportion of lime to Portland cement, as well as by the workmanship. Decorative brick veneers are a special seismic problem. A veneer was often laid up with building paper between it and the URM wall and was anchored with iron or galvanized ties. The ties normally corrode within 20 years, leaving a heavy brick face just waiting to peel off when subjected to a lateral load.

These buildings are usually one to six stories high. There is no steel reinforcement on ledges formed for the floors and roof to sit on. Even with the tie plates that anchor the joists and rafters to the exterior walls and plywood sheathing on the roof, these buildings present the greatest risk of collapse during an earthquake. The risk is greatest at the corners, which tend to blow out.

Reinforced masonry construction consists of cinder block or clay brick. The mortar is made of sand and cement. Grout can be used to fill vertical cavities in the block. Horizontal and vertical steel is used for additional strength. Floors and roofs are connected directly to these walls. Things to look for in this type of construction are cracks, out-of-plumb walls, and connection points pulling away from each other.

Reinforced Concrete

Older concrete-frame buildings may or may not have steel reinforcement. Floors are thick and heavy and can pancake-collapse as columns punch through each floor.

Precast concrete structures are one to six stories high with concrete floors supported by precast columns and girders. Collapse is initiated by the failure of the joint between the slab and wall or the girder and column.

Tensioned concrete can have rebar for longitudinal tension stress and enclosed-type steel ties that can be tensioned as the structure is assembled. Wall-like structures of cast, precast, and tensioned concrete have out-performed frame construction in most earthquakes.

Tilt-up concrete wall buildings are usually one to two stories high with a lightweight roof. These buildings are made of concrete slabs that have been tilted up to form exterior walls. Prior to 1972, the walls were not placed in footings; after 1972, they **were** placed in footings. Failures occur from separation of walls and roof.

Steel Construction

Steel construction is found in highrise buildings. Steel is tough and strong, but it needs to be fireproofed. It starts to lose strength around 700 °F (371 °C). It is ductile; that means it can be overstressed and severely bent, but it will retain enough strength to resist failure, giving ample warning of collapse. The weakest points are the connections that are welded, bolted, or riveted in older buildings. Beams must be laterally braced so as not to buckle about their weak axis from foundation shear.

Collapse Voids

Void spaces are created when furniture, machinery, and other strong, bulky objects support sections of collapsed floors and walls. Larger spaces and voids are created by collapsed wooden floors, which tend to remain intact in large sections. Collapsed void spaces are divided into four major categories:

1. Lean-to collapse.
2. "V"-type collapse.
3. Cantilever collapse.
4. Pancake collapse.

All four of these collapse patterns can create void spaces in which victims may be found.

Lean-To Collapse

The lean-to collapse creates the greatest chance of victim survival. This type of void space is created when a floor or roof section becomes dislodged and one end falls to rest on the floor below. The other end of the dislodged section remains attached to the wall member. Care must be taken to shore the wall properly for a torsional load.

"V"-Type Collapse

This type of void space is created when a floor or roof section breaks into two pieces and collapses to the floor. It creates two void spaces, one on either side of the break. In this situation, both exterior walls are loaded with a torsional load and require shoring.

Cantilever Collapse

This type of collapse is common in URM buildings where the exterior wall has been destroyed completely on one side. This may create many void spaces that have a high victim-survival rate. The actual cantilevered portion creates an extreme hazard for rescue personnel and must be shored properly to prevent additional collapse.

Pancake Collapse

This type of collapse is a total collapse of many floors of a structure, creating many smaller void spaces in which victims may be located. This type of collapse requires tunneling to access the void spaces. Proper shoring techniques must be employed to allow responders to access the void spaces safely.

Operational Considerations

The IC needs to develop an IAP that includes appropriate priorities, objectives, Command structure, and resource requirements. The development of this plan should include consideration of the following 24 rational factors:

1. Time.

   The time of day provides information on the occupancy load and location of people in the structure.

2. Location.

   Access is important to an effective operation.

3. Occupancy.

   Knowledge of the occupancy yields information on hazards, occupant use, and the types and number of businesses.

4. Height and area.

   Consider all six sides and the area involved.

5. Size of collapse area and structural hazards.

   This assessment will dictate resource requirements and safe methods of rescue.

6. Fire and hazardous materials problems.

   Fire or hazardous materials problems may impede a collapsed structure rescue operation.

7. Exposures.

   Interior and exterior exposures should be considered to prevent additional damage or injury.

8. Utilities.

   Control of gas, water, and electricity is a major safety factor for both rescuers and victims.

9. Weather.

   Temperature variations affect rescuers and victims. Wind and rain certainly may create additional problems inside and outside the structure.

10. Victims.

    Victim location is a priority in the initial rescue plan and may be determined by a variety of methods.

11. Traffic.

    Speed of response and access to the collapse site are critical. Alternate routes and traffic control should be planned.

12. Rail.

    Surface and underground rail systems may be part of the collapse problem or may affect it because of vibration.

13. Personnel accountability.

    Rescue operations require a multidisciplined response from fire, emergency medical services (EMS), police, public works, building department, transportation department, volunteers, and many others.

14. Incident Command.

    The complexities involved in rescue require an effective ICS to manage and coordinate operations, planning, and support.

15. Communications.

    Intraagency and interagency communication capabilities are essential to effective and safe operations.

16. Medical.

    Rescue medical operations need to provide for victims as well as having a component to handle the needs of responders.

17. Safety.

    Safety is the top priority in rescue planning and operations and must be considered throughout the incident.

18. Special equipment.

    Collapsed structure rescue operations may require the use of specialized search equipment, and portable cutting, breaking, and breaching equipment.

19. Construction equipment.

    Large, mechanized construction equipment may be needed to remove debris so that rescue operations can be expedited.

20. Shoring materials.

    A large amount of shoring materials may be required for safe access to victims and for structural stabilization. Preincident planning of supply sources is important.

21. Information updates.

    Continuous information updates are needed during every stage of the rescue operation.

22. Staging Areas.

    Staging Areas should be established for incoming resources so that the response into the rescue site can be managed effectively.

23. Responder Medical Unit, responder rehab, and relief.

    Long-term rescue operations necessitate periodic rest periods for rehabilitation of rescue workers, including provisions for relief so that operations may continue without pause.

24. Secondary collapse.

    The hazard of secondary collapse must be considered, whether from an earthquake aftershock or from failure of an already-weakened support structure.

Structural Triage

Completing a structural triage helps to identify, select, and prioritize the structures with the highest probability of success with respect to finding and rescuing live victims. The term "triage" used in EMS is used here with the same general meaning: to sort by severity, damage, survivability, etc.

Structural triage is accomplished using the following steps:

- Obtain precollapse intelligence. This includes information from witnesses and victims, building diagrams or plans, and occupancy information.

- Deploy reconnaissance teams to evaluate structural conditions, hazards, and rescue opportunities (may use structural specialist and hazmat specialist). This information will assist in determining hazard versus risk in rescue operations.

- Analyze information and determine the best rescue risk-to-benefit ratio.

- Significant hazards such as collapse, fire, or hazmat may result in a "no go" assessment until the hazard can be mitigated.

- Prioritize rescue sites. These priorities are value judgments based on the information provided at the time. The highest priority sites are those where the most victims can be rescued safely in the shortest amount of time. The victim rescue probability assessment would involve

  - the potential number of victims trapped,
  - condition of the voids,
  - the time needed to get the victims,
  - the chance of secondary collapse, and
  - other hazards involved in the rescue.

- Continually reevaluate. Conditions change, sometimes improving and at other times becoming worse. Intelligence on the site should improve with time, thus assisting the IC in developing additional search and rescue strategies.

Structure Triage, Assessment, and Marking System

At times, an IC may be confronted with the responsibility for a general area that encompasses multiple buildings affected by the event, with little or no search and reconnaissance information. The Structure Triage, Assessment, and Marking System is designed to help identify, select, and prioritize the buildings with the highest probability of success with respect to finding and rescuing live victims. This may not be the building with the largest number of victims or the building in the best structural condition.

It is important that information related to building identification, conditions and hazards, and victim status is posted in a standard fashion. The following procedure may be used by an IC during the first hours after arriving at an assigned location if faced with a situation of little or no information.

Structure Triage Operations

Deploy one or two Structure Triage Teams into the area. A team should consist of:

- one Structural Specialist; and
- one Hazardous Materials Specialist.

Each team conducts a short survey of the buildings in the area. The identification of structure and location is established during the triage process. This assignment could be conducted

simultaneously at the inception of the mission while the IC deploys personnel to assess possible sites for locating the Base of Operations (BOO).

The following assumptions relate to the structure triage:

- If a large area or many buildings are involved, triage can be performed by two or more Structure Triage Teams.

- It is imperative that the teams compare assessment criteria before and after triage. This ensures that uniform evaluations are obtained.

- Some buildings may have significant hazards (e.g., structure on fire, collapse hazard, or hazmat spill) that do not allow rescue operations to proceed until the hazards are mitigated. These are given "no go" assessments. Followup marking of the structure must occur during the search and reconnaissance phase.

- Triage assessments are based upon value judgments made with rapidly obtained information. These should always be subject to a common-sense review. Adjustments may need to be made by the IC.

- Triage criteria should be reevaluated after the initial search to consider new information on live-victim locations.

- Structure marking may or may not occur during the initial structure triage phase. (A standard Structure/Hazards Marking System can be found in Appendix H.)

LIFE SAFETY AND PERSONNEL CONSIDERATIONS SAFETY

Hazards at a collapse site may be numerous, involving structural failure, nonstructural damage, and environmental conditions requiring specific mitigation and protection for responders and victims. Structural collapse, which is generally classified as a low-frequency/high-risk incident, is where most of our people are killed and/or injured.

Collapse Hazards

Hazards associated with secondary collapse originate in damage caused by the primary event.

Nonstructural damage does not carry the risk of secondary collapse. Indications may be the obvious broken window, cracks in plaster and drywall, and damage that prevents doors from opening easily.

Structural damage indicates that the stability of the building has been compromised. This can involve anything from doors ajar to exterior and interior walls that are racked or tilted, floors and ceilings staffing or bucked. Hazards to be aware of include the possible instability of the

building materials in the areas of the structure that are being worked in. Things to look at are the main connection points of the structure.

Nonstructural failures such as those listed below may result in secondary collapse.

- **Chimneys--**Failure may be indicated by cracks and partial collapse, especially in renovated structures. Chimneys may need to be taken down before any rescue work is initiated.

- **Mechanical equipment--**Air conditioners, heaters, and coolers on the roof or in the attic, or signs and billboards on the roof, pose a hazard.

- **Parapets, dormers, and facades** can be hazards, especially with newer construction. The connection points are weaker than in older buildings and facades can collapse totally without warning.

- **Glass** can always be a hazard, especially the larger and thicker pieces. If there is glass around an entry point or in a location where responders are working, break it out to eliminate any chance of it falling during aftershocks.

Utilities and Adjunct Hazards

Natural Gas or Propane

Natural gas and propane, when free in an open-air situation, are not very serious hazards. However, when either is leaking in a closed environment, it can be deadly. If you suspect a gas leak (and you should), it is important to shut off the gas at the meter. If the meter is at the location of the leak, ventilate the area before entering, if possible, and keep all civilians from entering.

When dealing with propane, remember that it is heavier than air, settles in low areas, and may not dissipate like natural gas. When it reaches a source of ignition, it can explode! Natural gas distribution lines found in the street carry from 10 to 55 psi, and the lines that feed a single-family structure are pressurized to 1/3 psi. In commercial applications, pressure can vary depending on the needs of the business; however, it will not exceed the maximum distribution pressure of 55 psi.

Electrical Hazards

Just as in firefighting operations, it is very important to be aware of electrical hazards that could exist after a collapse. Before you enter a building, it is important that all utilities be shut off and that the area be secured with fire line tape so that no unauthorized persons can enter it.

Even when no obvious hazard exists, there can still be live wires that pose a hazard. Usually, anything over 750 volts is marked on a pole by a "high voltage" sign. Anything that is located on the pole above this sign is considered "high voltage." Transmission lines can carry up to 500,000 volts and smaller lines 34,500 volts. Transformers drop the high voltage to service currents of 240, 480, 4,800, and even 34,500 volts in some industrial and commercial applications. If these lines are down, it is very important to treat them as though they are hot.

Hazards Associated with Water

After a collapse, it is not uncommon to find that the utility lines have been severed. Water pooling from broken pipes on upper floors may cause a secondary collapse. Water may also flow into the basement area, causing problems for victims trapped in those locations. Water also increases the possibility of electrical shock if the electricity has not been disconnected or severed.

Hazardous Materials Situations

After any event large enough to cause a significant amount of damage, structures displaying a 704 placard should be approached with extreme caution. Chemicals in their normal state have certain properties that are predictable. When they are mixed or are involved in a fire they become totally unpredictable. Always treat any situation involving hazmat as though it were the worst-case scenario. Even buildings that do not have the 704 placard are potentially dangerous to first responders. Keep your eyes open to what is going on around you and continue to gather information pertinent to the incident.

Fire-Related Incidents

Incidents involving fire should be handled in the same manner as a normal firefighting operation, with the following exception: an aggressive interior attack on the fire should be reconsidered. Consider what is burning, what types of life hazards exist (if any), and the condition of the structure--that is, is a secondary collapse imminent? If any of the above questions raise concerns in your mind, then discretion is the best way to approach these fires. Make sure that the exposures are covered, handle any life hazards first, and then extinguish the fire in the safest manner.

First responders can only do so much with the resources that are available at the time. It might be prudent to keep civilians away, keep responders out of these badly damaged buildings, and keep the fire from spreading to adjacent structures.

Dust/Asbestos Atmospheres

In any collapse situation, whether from an earthquake, explosion, or collision, there will probably be a tremendous amount of airborne particulate matter. First responders need to protect themselves from whatever is in the air. There could be asbestos or other harmful things in the air which might not be immediately obvious and might not affect responders right away.

Some fire departments provide their members with dust masks. These should be worn at all times in contaminated atmospheres. If you suspect something is in the air, you should at least have a dust mask on.

Flooding (Caused by Other Than Broken Water Pipes)

Water from something other than broken water pipes can pose a problem. A dam letting go or a swimming pool failing above a rescue site would put a crew in a dangerous position.

Risk Management

Risk management is the process of evaluating and mitigating hazards in the environment. The IC must perform this activity to ensure the safety of the rescuers. Although other people within the ICS provide the IC with advice, ultimately, it is the IC who is responsible for making the "go/no go" decision.

The risk management process involves five steps.

1. **Situational awareness** involves observing and obtaining accurate information. It is the product of combining long-held attitudes and knowledge with new information as it is gathered to build a new perception. The more accurate and timely the new information, the closer one's awareness of the reality of the situation. This is the foundation on which decisions are based. Good information is the key to good decision making.

2. **Hazard assessment** consists of identifying and evaluating the hazards and their potential. Exercising judgment on the probability of a hazard and its potential severity is inherent in the hazard assessment step. Assess the potential collapse hazards, the environmental hazards, and the hazards that result from the tactics selected.

3. **Risk control** involves applying measures to reduce or eliminate the hazard. Risk controls can vary from a simple briefing that provides awareness of a hazard to shoring an unstable structure prior to entry. Providing appropriate protective gear and a communication system are also risk controls.

4. **Reaching a decision point** is accomplished by:

    a. Evaluating hazards and risk controls.

b. Deciding to commit (or not to commit) resources to the assignment. There are three key questions to ask before starting operations. They should all be answered **yes**!

- Can personnel work safely in the collapse zone?

- Does everyone understand the strategy and tactics?

- Has a briefing been given with feedback opportunity?

5. **Evaluation** is accomplished by:

a. Ensuring that the plan is working.

b. Planning to evaluate continuously.

Leaders earn their pay in this step of the risk management process. You must coordinate the resources working for you so that they can accomplish the objectives of the plan. This means you should follow up during an operation to ensure that the plan is working, do continuous reevaluation of the operation to make adjustments as the situation changes, and incorporate lessons learned for future use. Whenever an adjustment is needed, it should be a cue to update the situation awareness. This puts you back at the first step of the risk management process. The structural collapse environment is dynamic and this means that you must be able to adapt to continuous change.

Personnel Accountability

The IC must ensure that a personnel accountability system is established early during initial response, that the accountability level goes down through the incident organization, and that it is maintained throughout the incident. This system must include accurate information identifying company, crews, and personnel assignments and locations. Good communications and a safety plan are essential elements of this system.

Reporting procedures and signaling systems should be well understood by everyone.

Continuous documentation is important in resource tracking.

Incident Commander Responsibility for Scene Safety

Hazards and dangerous working conditions may be reduced or eliminated through effective Incident Command that:

- provides leadership and organization;
- obtains accurate information and develops a plan;

- makes safety a top priority;
- assigns a SO and Rapid Intervention Crew (RIC);
- assigns an assistant SO with structural collapse training;
- provides for appropriate protective measures and safety equipment;
- rotates crews and provides Medical Unit with responder rehabilitation;
- plans for contingencies;
- monitors, isolates, confines, contains, and mitigates hazards;
- communicates and uses the Chain of Command;
- has periodic briefings; and
- plans for injuries and stress management.

ESTABLISHING SCENE CONTROL

Establishing scene control should coincide with the initial sizeup and IAP.

Some of the actions the IC should take when managing the scene of a structural collapse include

- isolating the area;
- establishing zones:
  - collapse hazard zone (hot zone),
  - rescue work zone, and
  - operational work area;
- marking and identifying areas;
- evacuating bystanders and nonessential people;
- controlling perimeters is accomplished by:
  - controlling and managing spontaneous responders,
  - providing access/entry routes into worksite,
  - providing for outer perimeter access control,
  - developing a traffic plan, and
  - requesting (and using) law enforcement for this function;
- establishing site security by:
  - requiring authorization to enter site,
  - media control, and
  - use of law enforcement;
- establishing incident facilities, such as:
  - Command Post (CP),
  - Staging,
  - medical triage and treatment area,
  - base,
  - cribbing and shoring work station,
  - evacuation area, and
  - rehabilitation area;
- investigating the incident by:
  - seeking cause determination (criminal or accidental),

- preserving evidence, and
- documenting; and

- requesting assistance.

Rescue Site Management and Coordination

As rescue opportunities are identified, it is important that rescue personnel adhere to a consistent, formalized site management procedure to ensure the safe, effective operation of the rescue squad(s). The following considerations should be addressed.

- Sizeup actions and site control activities should occur simultaneously. The responsible Rescue Group Supervisor should review the situation and safety issues and begin formulating a plan of action to effect the rescue. Assistance may be required from the structural and hazardous materials specialists.

- At the same time, the remaining rescue specialists should begin to take firm control of the immediate site. Their actions should include

  - assessing and mitigating hazards,
  - shutting down all utilities,
  - establishing collapse hazard zone (hot zone),
  - clearly defining the rescue work zone,
  - removing all bystanders, and
  - organizing an equipment assembly area and a cutting workstation.

- Sizeup and site control activities should be completed before rescue operations begin.

- Once the sizeup is completed and the plan of action is developed, a short team briefing should be conducted. A "thumbnail" sketch of the site features and rescue operation should be made. Team briefings improve the operation and team effectiveness, allowing all personnel to understand what is to be accomplished and to plan ahead for the required tools, materials, and tactics. In addition, safety considerations, structural concerns, hazard identification, emergency signaling, and evacuation procedures should be addressed.

Rescue Site Setup

When establishing the perimeter of the operational work area, the needs of the following support activities must be provided for and properly identified.

CP--area used by the IC to manage and coordinate all search-and-rescue activities at the site.

Medical Treatment Area--location where the medical team can set up operations and provide treatment to responders and extricated victims.

Personnel Staging Area--place where unassigned responders are available for immediate assignment or as an RIC for immediate response in case rescue workers become trapped.

Rescue Equipment Staging Area--area where tools and equipment can be safely stored, maintained, and issued as needed to support the operation.

Cribbing/Shoring Working Area--area where building materials, lumber, and other items can be stored and processed as needed to support the onsite search-and-rescue operations.

Access/Entry Route(s)--A clearly defined avenue planned and identified for access to and from the rescue worksite. Personnel, tools, equipment, and other logistics needs are channeled safely through this route. In addition, controlled egress is required to evacuate a victim or injured responder quickly.

For long-term operations, consideration must be given to providing tarps or tents for the security and environmental protection of tools and equipment and for the comfort of the assigned personnel and victims.

Outside the operational work area, Staging Areas may be set up for vehicles and apparatus. An incident base also may be set up.

COMMUNITY CONSIDERATIONS

A structural collapse may produce a variety of reactions and conditions in many segments of the community.

The local population is affected in various ways and to various levels. Possibilities are described below.

- Victims may need medical and emotional care, short term and long term.
- Responders may also need medical and emotional care.
- Relatives of victims may need comfort and support.

Community response may involve volunteers and donated items.

Volunteers

Spontaneous

These types of people respond early to assist in the incident, during the operations, and after the response is over (during the recovery and rebuilding process). Spontaneous volunteers may or may not be trained to perform specific functions. Emergency response personnel should know how to manage these volunteers at a collapsed structure incident.

Trained

These people may be a very useful resource if they are used safely and properly to assist the professional responders. The Red Cross and Salvation Army, for example, may be repositories of trained volunteers who may assist responders, victims, and the general population in many ways.

Donated Items

The community may donate items for victims and rescuers. These may include items such as food provided during incident operations or clothing and medicine provided after the incident. Donated items require a management system so that they may be distributed where needed in a timely manner.

Critical Incident Stress Management

CISM may be needed for responders, victims, and people in the community. A program should be in place to handle these kinds of situations from the agency or jurisdiction involved. Other agencies, such as the Red Cross, may be needed to assist. CISM should be

- Implemented early in the incident (CISM may include the prebriefing and defusing of responder personnel).

- Integrated into the recovery phase and into the postincident followup as necessary.

Community Impact

Community impact may be significant in many areas.

The Media

It is important to work with the media so that mutual objectives are accomplished. The media may become a positive resource in providing accurate information to the public on a timely basis. A Public Information Officer (PIO) will need to be assigned to assist with media relations and information. One of the PIO's duties will be to provide accurate and timely information to the community (through the media). Large-scale incidents in which multiple agencies are involved may require establishment of a Joint Information Center (JIC). The JIC would ensure that accurate and consistent information is disseminated throughout the incident.

Economic Impact

A collapse involving one or many structures may have severe short-term or long-term economic effect on the community due to many factors:

- The loss of homes, causing people to move to other communities.
- The loss of jobs from the damage to the structure. In the short term, jobs such as construction may increase due to the repair and rebuilding involved.
- The loss of a special facility on which the community depends, such as a large manufacturing building. This may result in the loss of part of the community tax base and the movement of business and industry to other areas.
- The recovery phase and rebuilding may take months to years, depending on several factors, such as the community recovery plan and funding availability and quantity required for the project.

Activity 4.1

Scene Assessment

Purpose

To be able to recognize assessment factors needed to develop an IAP.

Directions

1. The instructor will divide the class into four teams.

2. Your team will be assigned a breakout area.

3. The instructor will present the structural collapse scenario associated with this activity. (You may wish to take notes on what you see and hear during the scenario presentation.)

4. A building floorplan (of the collapsed building) has been provided on the following page.

5. Once relocated in your breakout area, your team will do the following:

   a. Select a team spokesperson.

   b. Complete the Scene Assessment Worksheet.

6. The instructor will give each team one question to answer. All teams will complete Question 5.

7. At the conclusion of the allotted time, the instructor will reconvene the class.

8. Each spokesperson will have 5 minutes to report team answers to the class.

9. The instructor will assist and clarify key points.

10. Teams should keep their materials for the next exercise.

Scenario Information

- time of day: 0700 hours--Saturday;
- weather conditions: clear, 75 °F (24 °C), wind 10 miles per hour (mph); and
- other important considerations:
  - three-story wood-frame apartment complex,
  - dimensions: 150x325 ft,
  - number of units: 163, and
  - collapse caused by an earthquake with a magnitude of 7 on the Richter scale.

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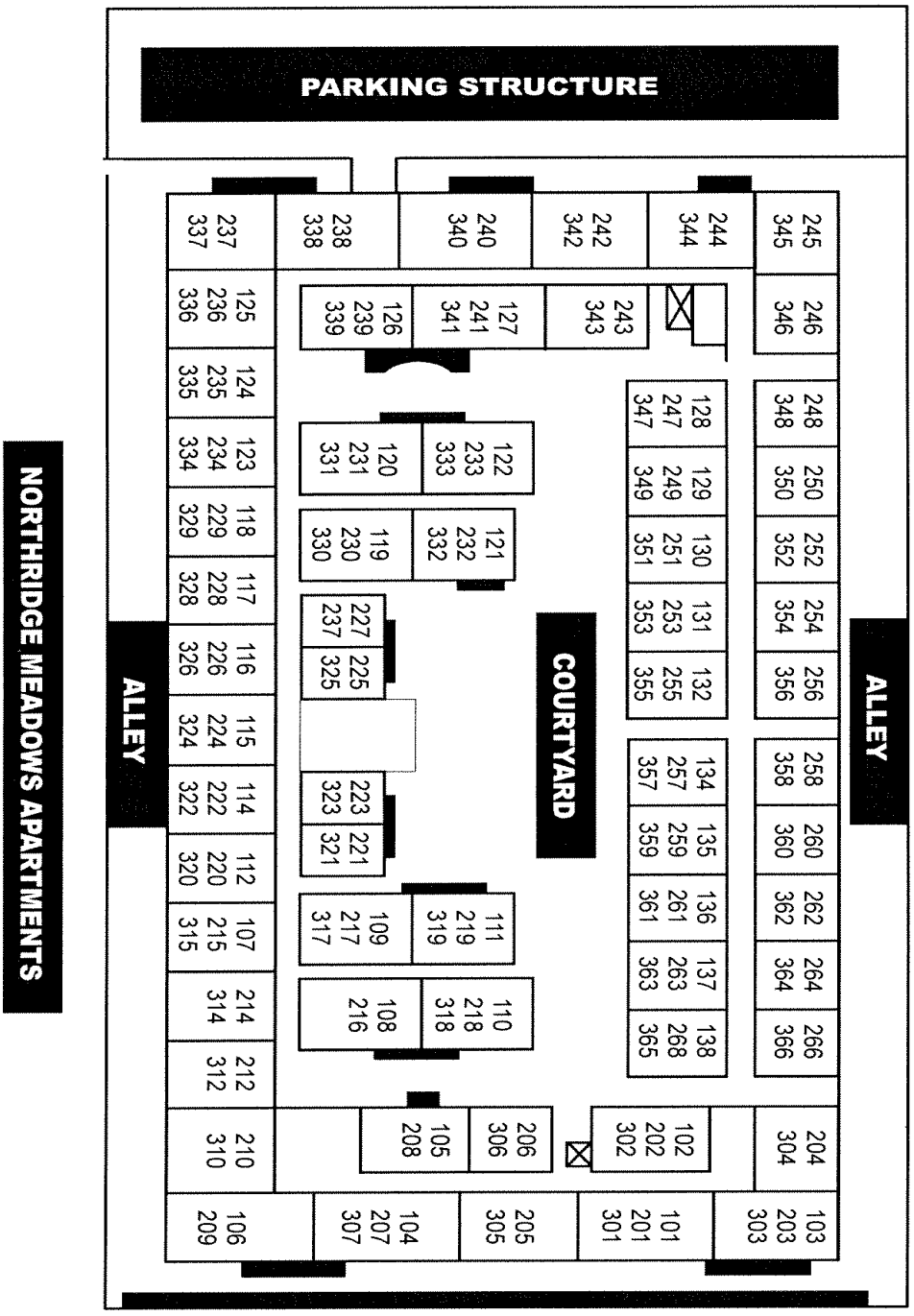
Activity 4.1 (cont'd)

Building Floor Plan



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Activity 4.1 (cont'd)

Scene Assessment Worksheet

1. What are the incident conditions upon your arrival?

2. What are the hazards?

3. Where may victims be located?

4. What factors could be used to determine victim locations?

5. What elements should be considered in the development of the IAP?

NOTE-TAKING GUIDE

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NOTE-TAKING GUIDE

Slide 4-1

Unit 4:
Scene Management:
Factors and Issues

Slide 4-1

Slide 4-2

Terminal Objective

The students will be able to identify critical factors and issues that affect structural collapse scene management.

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Slide 4-3

Enabling Objectives

The students will:

- **Identify factors associated with rapid scene assessment.**
- **Identify life safety issues.**
- **Identify key elements of scene control.**
- **Explain the importance of establishing appropriate incident facilities.**
- **Describe the potential effects and consequences of the incident on and for the community.**

Slide 4-3

Slide 4-4

Introduction

The Incident Commander's (IC's) initial actions set the tone for the incident.

- **Sizeup and structural triage produce information for:**
  - **The action plan.**
  - **Rescuer and victim safety.**
  - **Increased operational effectiveness.**

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Slide 4-5

Incident Emergency Management Planning Phases

- **Initial response plan**
- **Expanded response**
- **Extended response**
- **Demobilization**

Slide 4-5

Slide 4-6

Initial Response Plan

- **Perform sizeup**
- **Develop initial plan (objectives and strategies)**
- **Request and/or assign resources**
- **Develop organization**
- **Evaluate operations**

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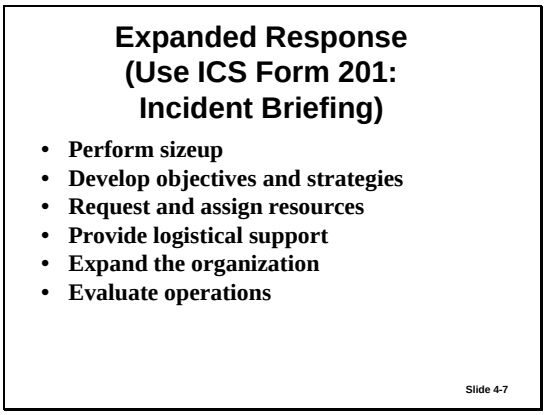
Slide 4-7



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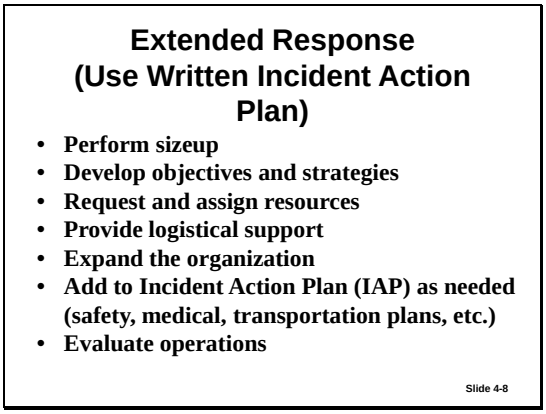

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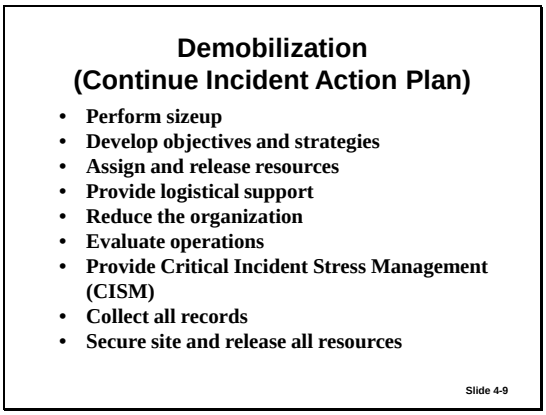

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Demobilization/Critical Incident Stress Management

Allow the team or groups to pay last respects or have a moment of silence before leaving site.

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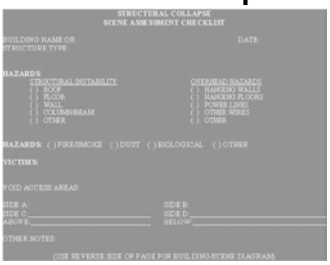
Slide 4-11

Structural Collapse Scene Checklist Sample



STRUCTURAL COLLAPSE
SCENE ASSESSMENT CHECKLIST

BUILDING NAME OR STRUCTURE TYPE: DATE:

HAZARDS:

STRUCTURAL INSTABILITY
( ) ROOF
( ) FLOOR
( ) WALL
( ) COLUMN/BEAM
( ) OTHER

OVERHEAD HAZARDS
( ) HANGING WALLS
( ) HANGING FLOORS
( ) POWER LINES
( ) OTHER WIRES
( ) OTHER

HAZARDS: ( ) FIRE/SMOKE ( ) DUST ( ) BIOLOGICAL ( ) OTHER

VICTIMS:

VOID ACCESS AREAS:

SIDE A: SIDE B:
SIDE C: SIDE D:
ABOVE: BELOW:

OTHER NOTES:

(USE REVERSE SIDE OF PAGE FOR BUILDING/SCENE DIAGRAMS)

See Appendix G for a more complete checklist

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Initial Scene Assessment

Sizeup involves obtaining information about the incident so that a plan can be developed.

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Operational Considerations

When developing an IAP, consider:

- **Time**
- **Location**
- **Occupancy (hazards, type, multiple)**
- **Height and area (six sides)**
- **Size of collapse area and structural hazards**
- **Fire and hazardous materials problems**

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Operational Considerations (cont'd)

- **Exposures**
- **Utilities (gas, water, electricity)**
- **Weather**
- **Victims**
- **Traffic**
- **Rail**

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Operational Considerations (cont'd)

- **Personnel accountability**
- **Incident Command**
- **Communications**
- **Medical**
- **Safety**
- **Special equipment**

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Operational Considerations (cont'd)

- **Construction equipment**
- **Shoring materials**
- **Information updates**
- **Staging Areas**
- **Responder Medical Unit, rehab, and relief**
- **Secondary collapse**

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Slide 4-28

Structural Triage

Helps to identify, select, and prioritize the structures with the highest probability of success with respect to finding and rescuing live victims

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Structural Triage (cont'd)

Steps:

- **Obtain precollapse intelligence.**
- **Deploy reconnaissance teams.**
- **Analyze and determine the best risk-to-benefit ratio.**
  - **Significant hazards may result in a "no go" assessment.**
- **Prioritize rescue sites.**
- **Reevaluate continually.**

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Life Safety and Personnel Considerations

- **Collapse hazards consist of:**
  - **Structural failure.**
  - **Nonstructural failure.**
  - **Nonstructural damage.**
  - **Environmental conditions.**
- **Low-frequency/High-risk incidents are where most of our people are killed or injured.**

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Risk Management

Five-step process:

- **Situational awareness**
- **Hazard assessment**
- **Risk control**
- **Decision point**
- **Evaluation**

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Risk Management (cont'd)

Other people in the system give the IC advice, but ultimately the "go/no go" decision is made by the IC.

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Personnel Accountability

- **The IC must ensure that a personnel accountability system is in place early during initial response.**
- **Accurate information must be provided on assignments and locations of:**
  - **Companies.**
  - **Crews.**
  - **Personnel assignments and locations.**

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Scene Safety

Effective Incident Command will:

- **Provide leadership and organization**
- **Obtain accurate information and develop a plan**
- **Make safety a top priority**
- **Assign a Safety Officer (SO) and an Assistant Safety Officer (ASO) with structural collapse training and Rapid Intervention Crew (RIC)**
- **Provide appropriate protective measures and safety equipment**

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Scene Safety (cont'd)

- **Rotate crews and provide Medical Unit and rehabilitation**
- **Plan for contingencies**
- **Monitor, isolate, confine, contain, and mitigate hazards**
- **Communicate and use chain of command**
- **Have periodic briefings**
- **Plan for injuries and stress management**

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Establishing Scene Control

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Media

- **Structural collapse incidents are always newsworthy.**
  – Assign a Public Information Officer (PIO).
  – Work with the media.
  – Provide accurate and timely information.
- **Political issues may arise.**

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Economic Impact

- **A collapse involving one or many structures may have severe short-term or long-term economic effects:**
  – Loss of homes
  – Loss of jobs
  – Loss of a special facility on which the community depends, such as a large manufacturing building
  – Loss of community tax base
  – Movement of business and industry to other areas
  – Recovery and rebuilding may take years

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Activity 4.1
Scene Assessment

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Summary

- **Sizeup provides information needed to develop the IAP.**
- **Structural triage helps identify and prioritize rescue areas with the highest probability of success.**
- **Many factors regarding the collapsed structure incident must be considered to develop a rescue operational plan, objectives, priorities, Command organization, and resource requirements.**

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Summary (cont'd)

- **The IC should initiate the risk management process to determine the safe commitment of resources.**
- **A personnel accountability system should be used to ensure rescuer safety.**
- **Hazards and dangerous working conditions may be reduced or eliminated through effective incident management.**
- **Scene control must be initiated early to establish a safe and functional worksite.**
- **The effect of a structural collapse may have major implications in the community with local populations, the media, politicians, and the economy.**

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UNIT 5: RESPONSE FUNCTIONS

TERMINAL OBJECTIVE

The students will be able to describe unique operational considerations for a structural collapse incident.

ENABLING OBJECTIVE

The students will identify primary functions used during structural collapse operations.

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INTRODUCTION

The Incident Commander (IC) must be able to analyze a collapsed structure incident accurately and develop the appropriate objectives, strategies, and resource requirements to locate and rescue the injured and trapped effectively.

The following response functions may be part of a structural collapse incident:

- command and coordination;
- search;
- rescue;
- medical;
- Technical Specialists; and
- safety.

RESPONSE FUNCTIONS

Command and Coordination

Command provides the management function for overall incident operations. The process that Command uses consists of the following steps:

- obtain incident information;
- analyze intelligence;
- develop and select primary and alternate objectives ("what needs to be done"); and
- **prioritize** the objectives:
  - life,
  - property,
  - systems,
  - environment, and
  - situation (multiple locations).

Developing Objectives, Strategies, and Rescue Requirements

The following is an example of developing tactics and resource requirements from initial objectives.

Initial Objectives

- recon site;
- identify and reduce hazards;
- establish scene control;
- search first, second, and third floors;
- rescue surface victims;

- access and explore voids and rescue victims;
- provide emergency medical services (EMS);
- support rescue operation;
- provide for crowd and perimeter control and security; and
- handle media.

How to Implement

- deploy recon teams--recon team reports;
- control uses, stabilize, monitor, and mitigate hazmat;
- establish zones (collapse, etc.);
- organize and deploy teams;
- use search-and-rescue teams;
- rescue team opening access, shoring, and rescuing victims;
- establish Medical Group and triage, treatment area;
- establish Logistics Section;
- use police and traffic departments; and
- assign Information Officer.

The general priority to keep in mind is…

"Do the most good
for the greatest number
in the least amount of time."

The Process

- Obtain incident information.

- Analyze intelligence.

- Develop and select primary and alternate objectives "**what needs to be done**."

- Set objectives and strategies. (Strategies are "**how** it will be done"--your response options.)

- Determine resource requirements. Consider capability, availability, and tactics.

- Task resources. Tactical operation is "**who** will do it and **when** it will get done" (assign resources to response options).

- Identify logistic support requirements.
- Develop Incident Command System (ICS) organization.
- Prepare and implementing an Incident Action Plan (IAP).
- Deploy resources and order additional resources.
- Evaluate operations and progress toward objectives.
- Revise plan as needed to accomplish objectives.

INCIDENT MANAGEMENT

The IC is charged with overall responsibility for the personnel, resources, equipment, and operations while on the incident scene. An important aspect of managing a structural collapse incident is the continual monitoring of the effectiveness of performance as it relates to the planned objectives.

- Are the resources committed achieving their objectives?
- If not, corrective actions and revision to the IAP are needed.

It is then the responsibility of the IC, in conjunction with the assigned tactical officers, to determine whether adjustments are required. The IC must monitor the effectiveness of the overall performance continually from a number of perspectives:

- Teams must be monitored to ensure that they function in a cohesive and effective manner.
- Monitoring must be done to ensure that individual performance is adequate.
- The proper intrateam interaction must take place. The IC must ensure that all elements are operating in concert and that there is sufficient coordination and communication.

The IC, operating at the Command Post (CP), acts as a hub for information from the members operating in the incident area.

- The IAP is based upon known or anticipated search-and-rescue requirements.
- At times during a mission operation, the IC may be presented with unexpected situations that could overwhelm their immediate resources. After a complete evaluation of the situation is made, it may be necessary to request additional resources at a rescue site location. If additional resources are not available, then a reassignment of present resources may be in order.

The assignment of incident personnel is based upon the developed operational plan and priorities for search-and-rescue tasks.

The IC must maintain close communications with their staff and subordinates. Having a communication radio channel for tactical, Command, and logistics operations is important.

A structural collapse operations report should be filled out for each worksite. Each report should include

- The personnel assigned to that location.
- Rescues made or activities undertaken.
- Potential rescue sites.
- Safety considerations.
- A drawing of the site.

These reports should be used to brief relief personnel at shift changes to ensure the continuity of the operation.

A unit log should also be maintained, listing the chronological order of events and activities during the mission.

Five Phases of Structural Collapse Rescue

There are generally five phases of rescue operations at collapse incidents.

1. Phase I: Survey the area for victims and assess the collapse area.

   - Area searched for possible victims (surface/buried).

   - Evaluation of the structure's stability.

   - Utilities evaluated and shut down for safety.

2. Phase II: Remove all surface victims as quickly and safely as possible.

   This may be done during the site survey.

3. Phase III: Search and explore all voids and accessible spaces for viable victims.

   - An audible callout system can be used during this phase.

   - Only trained canines or specially trained personnel should be used in voids/accessible-space searches.

4. Phase IV: Remove selected debris.

   Access using special tools/techniques may be necessary after locating a victim.

5. Phase V: Remove general debris.

   - This process is usually conducted after all known surviving victims have been removed.

   - It is ordered when the IC determines that no other victims are alive.

   - This method uses heavy equipment to demolish the building.

SEARCH

The search function locates victims using various search strategies, tactics, and techniques. This function ranges from basic search operations to the use of technical search equipment and search dogs.

A systematic search enables the IC and rescue teams to increase efficiency and reduce injuries. Subdividing the collapse site into definable areas improves both effectiveness and efficiency.

The search process involves

- performing reconnaissance (identify victim locations and hazards);
- interviewing witnesses;
- locating surface victims;
- exploring places likely to contain survivors (e.g., voids);
- marking locations and documenting; and
- prioritizing search and recommending rescue operation priorities.

Search Strategy and Tactics

Search Strategy

The most effective search strategy should blend together all of the identified tactical capabilities into a logical plan of operation.

Following survey and reconnaissance of the area, direct efforts toward search operations in specific collapsed buildings. Small buildings do not present too great a search problem. Large or multistory buildings are complex and create difficult search situations. When concentrating efforts on a particular building, start by finding out several pieces of information:

- building's use;
- number of occupants;

- number of victims trapped and their probable location(s);
- rescue operations currently underway; and
- presence of hazards:
  - gas and utilities,
  - flammable,
  - electrical,
  - flooding from burst mains,
  - plumbing and sewer disruption,
    -- secondary explosions when an explosion caused the initial incident, and
- structural stability of adjoining buildings.

Note: Electrical hazards present grave danger to rescuers. Utility companies will be attempting to reinstate power, thus causing possible electrocution hazards or fires.

Victim Location

Victims found on top of the debris or lightly buried should be removed first. All rescue efforts should be directed to the victims who can be seen or heard. Rescue efforts should also be directed to those victims whose locations are known, even if you cannot see or hear them.

The initial site assessment will point toward areas of potential voids that may have given a chance to survive to a person in the area during the collapse. It is important to gather all information available from witnesses as to how many people were in the building at the time and in what locations. All the information influences the determination of the search strategy to be used.

If victim location is not known, seek out casualties by looking in places that could have afforded a reasonable chance for survival. Typical areas that should be searched are

- hallways or exit ways;
- spaces under stairways or in bathrooms;
- basement and cellar locations;
- locations near chimneys or fireplaces;
- voids under floors that are not entirely collapsed;
- intact rooms from which egress is barred; and
- voids created by furniture or heavy machinery.

Victim Locator Unit

Normally, the Victim Locator Unit (VLU) would be activated when the location of potential victims must be identified. This would be dictated by incident needs (e.g., persons trapped and people unaccounted for). The purpose of the VLU is to locate and identify victims and witnesses involved in structural collapse incidents in order to assist in search-and-rescue operations.

The VLU is usually assigned to the Planning Section and information gained needs to be shared with the Search Group. The VLU is normally commanded by a Company Officer (CO) as the unit leader and staffed by the following personnel:

- Arson Unit investigators;
- paramedic supervisor; and
- police officers.

Unit members interview victims, witnesses, and persons with knowledge of the structure to determine the location of all occupants or other people who could be trapped or injured. Witnesses may include occupants (injured and uninjured), managers, supervisors, employees, or nearby observers. Information regarding victims should be documented with all pertinent information, including diagrams. A complete account must be made to ensure that rescue operations are timely and effective. At significant incidents, Geographical Information System (GIS) technology can be used to map the locations of potential victims.

VLU members may also assist in the cause determination investigation and in identifying potential hazards caused by the collapse. Hazard information is a high priority and should be communicated immediately to the IC.

Communications need to be addressed as part of the plan. Safety concerns make it mandatory to establish signals that will call for an immediate evacuation of a site.

Tactical Operations

There are several tactics that can be used for locating trapped victims. No single tactic is sufficiently effective on its own to ensure that a complete search has been conducted. The selection of tactical operations is, of course, limited by the resources available.

A practical method used to determine search priorities is based on the type of occupancies affected. Those that present the highest likelihood of survivability in terms of the type of construction and occupancy of the building and the number of potential victims would receive attention first. Occupancies such as schools, hospitals, nursing homes, highrise multiresidential buildings, office buildings, etc., would be searched first. The most effective search strategy should blend together all of the identified tactical capabilities into a logical plan of operation. These strategies may include

- physical void search;
- use of electronic visual or listening devices; and
- use of search dogs.

Large-Scale Search Priorities

One of the initial determinations that supervisory personnel may have to make at the inception of a mission is what area should be searched first. This consideration usually deals with larger geographic areas. There may be many damaged structures requiring attention.

Past experience shows that there are two general strategies to deploy search resources. The first is to divide the area geographically. Depending on the size of the damaged area and the search resources available, any area may be divided into geographic divisions by city block or other easily definable criteria.

The available search resources would then be divided and apportioned to each division for search operations. The division strategy may work well for small areas, but most likely would prove impractical for larger areas (such as an entire city or jurisdiction) in relation to the limited search resources available. The IC may consider expanding into numerically numbered branches (i.e., "Branch 1," "Branch 2") with divisions within each branch for a more effective and manageable system.

The second method is to determine the search priorities by the type of occupancies affected. Those that present the highest likelihood of survivability (in terms of type of construction) and the highest number of potential victims, based on occupancy of the building, would receive first attention.

When teams are covering large areas, they must remember that their priority is to conduct search functions to identify the location of all victims and to communicate any finds to the rescue teams while continuing the search activities. This focus on primary objectives helps to locate all victims rapidly.

Search and Reconnaissance Team

At the conclusion of the rapid structure triage, a search and reconnaissance team should be deployed to evaluate each building deemed viable (as a result of the rapid triage) for continued search-and/or-rescue operations.

Structure and search marking should be performed during this phase and prior to the initiation of rescue operations.

In certain situations, it may be most advantageous for the IC to deploy a full search-and-reconnaissance (recon) team when initiating operations at an assigned location. At other times, it may be necessary to deploy a search-and-recon team to a remote location during the course of a mission.

A full, 10-person search-and-recon team should be staffed with the following eight positions:

1. **Search Team Manager--**acts as team supervisor, sketches/records information, communicates details/recommendations to the IC.

2. **Canine Search Specialists--**conduct canine search operations and redundant verifications of alerts.

3. **Technical Search Specialist--**conducts electronic search operations.

4. **Medical Specialist**--provides treatment for located victims and/or team members.

5. **Structural Specialist**--provides analysis and advice regarding building stability, shoring, and stabilization.

6. **Hazardous Materials Specialist**--monitors atmospheres in and around voids and confined spaces; assesses, identifies, and marks hazardous-materials dangers.

7. **Rescue Specialists**--provide assistance to the search-and-recon team, including drilling/breaching for electronic viewing equipment and/or deployment of listening arrays.

8. **Safety Officer**--provides overall safety observations during the search-and-recon operations.

The search-and-recon team should conduct the following operations:

- Conduct general area and building search, reconnaissance, and evaluations.

- Perform victim location identification--this includes canine, electronic, and physical search operations. Marking the exact location with International Orange spray paint or orange surveyor's tape denotes the location of viable victims.

- Perform hazard identification and flagging--any type of personal hazard should be assessed and identified. This includes overhanging building components, structural instability or secondary collapse zones, hazardous materials, live utilities, etc. Hazard zones should be cordoned off conspicuously with surveyor's tape or fireline tape.

- Assess general atmospheric conditions in and around confined spaces or voids.

- Sketch the general search area and note all significant issues.

- Communicate findings and recommend priorities to the IC.

Specific equipment and materials are necessary for full support of a deployed search-and-recon team. This equipment should be segregated and receive priority consideration (cached and marked). This equipment should be available immediately to deploy a search-and-recon team as soon as possible.

Search Operations

The **"Golden Day."** This is the first 24 hours. The greatest number of living victims will be found on the first day (80 to 90 percent) and can be categorized as follows.

1. **Injured, not trapped.** These are also known as "surface victims" and usually account for about 50 percent of all victims. Injuries are usually caused by falling debris and by the victims hitting the ground. Rescues of this type are normally made by neighbors, coworkers, relatives, and civilians.

2. **Nonstructural entrapment.** These are also known as "light rescue" and usually account for about 30 percent of all victims. Rescue involves locating the victim and lifting building contents or small pieces of debris. Personnel should be able to recognize the unique hazards associated with the collapse of light-frame construction. Rescues are usually made by trained community or business Urban Search and Rescue (US&R) Teams or first emergency responders.

Time of Day

If arriving during daylight hours, use available sunlight to prepare for the duration of the operation. Diagram the area to be searched, section-off danger areas, and pool necessary resources. Try to visualize everything necessary for a 24-hour operation. Because of reduced visibility, nighttime operations require lighting systems and the taking of added safety precautions.

Building Use

The potential for building collapse exists in every community. Determine the search priorities in terms of the types of occupancies affected. Those that present the highest likelihood of survivability (in terms of type of construction) and the potentially highest number of victims (in terms of the type of occupancy of the building) would receive attention first--i.e., schools, hospitals, nursing homes, highrises, multiresidential buildings, etc.

Number of Occupants

Use available information resources to arrive as closely as possible at the actual number of building occupants to determine search priorities.

Number of Trapped Victims and Location

Victim location identification includes canine, electronic, and physical search operations. It is important to concentrate efforts where there are known victims and where possible victims are most likely to be found. Marking the exact location with International Orange spray paint or orange surveyor's tape denotes the location of viable victims.

Rescue Operations Already Underway

It is essential that every possible search method be employed to locate viable victims before committing rescue resources to any prolonged (although well-intentioned) operation. Body recovery is not the primary mission of a search-and-rescue team. The first phase is prioritizing the locations of trapped victims by survey and reconnaissance of the entire area. Use victims' information for locating others and stay focused.

Hazard Identification

Any type of personnel hazard should be assessed and identified. Hazardous materials, live utilities, flammables, etc., should be conspicuously cordoned off with surveyor's tape or fireline tape. Assess general atmospheric conditions in and around confined spaces or voids.

Structural Stability

The structural specialists should provide initial assessments of relative building stability and safety in relation to the ongoing search operations. In addition, recurring assessments should be performed throughout the operations.

An important consideration in the middle to later stages of the mission is the need to reassess previously-searched structures. If the profile of a building/structure has been reduced significantly because of debris removal by heavy equipment or secondary collapse, it may become necessary to treat the structure as a new opportunity and repeat the various search procedures.

Search Techniques

Separate Search From Rescue

A search team member's job is to locate victims and bring the rescue team to the identified victim locations.

Search team officers must maintain control of their team and keep the team from becoming involved in a rescue effort. Other victims are depending on the search team to find them.

Search Theory

Search activities in the urban environment most commonly involve locating or attempting to locate people who were in and around a structure at the time of collapse. A searcher conducting efforts for the victim must remember that they work **for** the victims.

Searching is hard work and demands discipline. Discipline allows the searcher to work both safely and effectively. Team members need to recognize both mental and physical fatigue. Becoming tired, bored, and indifferent are all signs of fatigue. Upon recognizing these signs, the searcher must take a break or change positions on the team. Four to six hours is the average usefulness of a searcher in a 24-hour shift.

Search Types

There are four primary types of searches:

1. Hasty.

2. Efficient.

3. Thorough.

4. Grid.

In addition, searches may be made with specialized tools. In all instances, at the very least, a hasty search must be conducted and one type of follow-up search is required. The net result is that all survivable spaces must be searched. All teams must mark victim locations and map locations for the written record. The map is very useful in leading rescue teams to victim locations.

Hasty Search

A hasty search is a fast, organized response to check areas most likely to produce surviving victims. This method must be employed on arrival to find the most obvious victim locations, indicated by calls for help, moans, or exposed body parts.

During the hasty search, keep moving. Stop only to call out to victims and listen for a response. You may also stop to mark hazards and to attempt surface rescues. **Note:** This is the only time the search team may perform rescues. If the number of surface victims is large, let the rescue team assist them. The main criterion for a hasty search is speed, not thoroughness or efficiency.

There are two objectives of the hasty search:

1. Quickly check high-probability areas.

2. Obtain information about search area.

Efficient Search

The efficient search is a relatively rapid systematic search of segments of the area that produce high probabilities of detection.

The main criterion for this search is efficiency, not speed or thoroughness. This method involves moving debris, taking more time while sounding and searching the most survivable areas. Again, rescue teams must be brought in as victims are located.

Thorough Search

This search is a slow, highly systematic search using the most thorough methods to provide the highest probability of detection. The main criterion for this search is thoroughness rather than speed or efficiency.

Grid Search

A grid or line search involves a slow, methodical search of an area and is usually employed to produce clues, not victims. Searchers walk in the same direction at the same pace. They are spaced according to the number of searchers and the amount of area to be covered.

Victim Location

Surface/Lightly Buried

Surface victims are the most easily located. Many of them will have effected self-rescue prior to the arrival of emergency personnel.

Known Locations

Known victim locations are determined through witnesses's statements and by listening for the victims calling for help or signaling from inside the structure and under the rubble.

Potential Voids

Noting the type of collapse, the direction in which the building has moved, and the distance the building has moved, helps to identify possible voids. Searching these voids increases the probability of detection.

Possible Safe Areas

Taking into account the time of day and building use, consider the following places as possible areas of relative safety for victims:

- hallways/exits;
- basements/cellars;
- voids from beds and furniture;
- voids from machinery; and
- voids from vehicles.

Physical Void Search

Formation of voids. After a collapse, sections of the floors, walls, and roof may fall in large pieces. These pieces may become wedged or positioned so that spaces of different sizes and shapes are formed beneath them. These are called voids. Victims may be located in these voids--alive. The more common types of voids are referred to as the lean-to floor, lean-to cantilever, the V-shape, the pancake, the overturn collapse, the combination, and the individual void.

Lean-to Floor Collapse

The lean-to floor collapse occurs when one of the supporting walls fails or when floor joists break at one end. With this type of collapse, the collapsed section is usually supported at both ends. That is, the uppermost edge is supported by the wall and the lower portion is resting on the floor or debris. This type of collapse usually creates a good-sized void.

Lean-to Cantilever Collapse

The lean-to cantilever collapse, or hanging type, occurs when one end of the floor or roof section is still attached to portions of the wall. The other end (or ends) is not supported at all and is hanging free. Without a doubt, this type of collapse is the most dangerous.

V-shaped Collapse

The V-shaped void results when heavy loads cause the floors to collapse near the center. This type of collapse creates voids at each end below the floors.

Common to all three types of collapses listed above is the location of the potential victims. Occupants above the collapsed floor will likely be found in or under the debris at the bottom end of the collapse. This is usually because the contents of the floor slide toward the collapsed area and take the occupants with them. The occupants below the collapse may be found in the supported void areas underneath the floor.

Pancake Collapse

The pancake collapse is the result of total bearing wall or column failure of an upper floor, causing excessive weight on the next and lower floors, thereby dropping all floors to a lower level. Victims may be found between layers of flooring. The more fortunate may be protected by a strong supporting object.

A-frame Collapse

An A-frame collapse occurs when flooring separates from the exterior bearing walls but is still supported by one or more interior bearing walls or nonbearing partitions. The highest survival rate for trapped victims will be for those near interior partitions. Other victims may be located in the debris near exterior walls.

Overturn Collapse

The overturn collapse is a condition that occurs when a building is literally laid over on its side. This can be caused by a column tension failure or a shear wall overturning inadequacy. Spaces that were vertical become horizontal and vice versa. Elevator shafts become access hallways. The overturn collapse can be prevalent in liquefaction areas of an earthquake.

Combination Collapse

The combination collapse can be a combination of the types already listed in one structure. This type of collapse can produce many void areas and is very hazardous.

Individual Collapse

Individual voids are created when furniture, machinery, and other strong, bulky objects support sections of floors and walls. It is worthy of note that the larger spaces and voids are created by wooden floors that tend to remain intact and in large sections, and by cellar or basement walls, where the thickness and absence of stresses resist tendencies to collapse.

STAGES OF SEARCH AND RESCUE

Immediately after a disaster that may cause structural collapse, the rescue services must function with speed and precision to free trapped victims. Every rescue operation, therefore, should proceed in stages and according to a regular plan.

While hard-and-fast rules cannot be applied to every situation, a systematic approach to the problem ensures a higher degree of efficiency, resulting in saving more lives and minimizing the danger to rescuers.

Locating and extricating the trapped persons presents the rescuer with a most challenging problem. The speed with which the casualty is removed and the degree of danger to both the rescuer and the rescued depend, to a large extent, on the methods and techniques employed.

The search stages are as follows:

Stage I

Reconnaissance--The general survey and sizeup of the damage area, gathering of facts, and abating of hazards. Find out the building's purpose and use; the number of occupants; the number of victims trapped and their probable location within the building; whether there are rescue operations currently underway by others; the nature and extent of damage; the danger of fire traveling in confined spaces; the presence of flammable liquids, poisonous gases, and chemicals; the location of live electrical wires and main electrical panels; the possibility of flooding from burst mains, plumbing, and sewers; and the possibility of additional collapse of the building or adjoining structures.

Immediate rescue of surface casualties--The rescue of victims found on top of the debris and of those partly or lightly buried. Simultaneous with or immediately after the initial survey, all efforts should extend toward rescuing survivors who can be heard or seen, or whose exact location is known, even if they cannot be heard or seen. As victims are removed from the debris, a triage and treatment site must be established. This site should be away from the immediate rescue area so that medical treatment and rescue efforts do not conflict. The establishment of Casualty Collection Points (CCPs) should be started as soon as possible in a location away from the collapse site.

Scene organization and management--This is probably the most difficult to establish at the beginning of a large-collapse event. The IC must try to manage the chaos, and at the same time, institute a Command system. They must determine resource needs; organize the rescue effort; organize the triage treatment and CCPs; assign resources as they arrive; and direct those civilians currently effecting rescue.

Stage II

Exploration and rescue from likely survival places--Likely survival places may be identified by victims, rescuers, and victim locator devices--such as rescue dogs, listening devices, fiber-optic video cameras, infrared video cameras, and sonic- and heat-sensing devices.

Rescuers need to search strong or sheltered parts of a structure, even though no definite information is available that victims may be trapped in such places. This does not mean that every possible hole and corner of a building needs to be searched, but rather that likely areas of shelter should be looked for and fully explored. The essential purpose is to recover living casualties by seeking out places that would have afforded a reasonable chance of survival. The exact places thus explored depend, to a large extent, on the type of collapse, the extent of damage, and whether or not there was any warning of collapse. The possibility of a warning may help pinpoint the location of persons immediately prior to collapse.

Typical areas that should be searched are spaces under stairways, basement and cellar areas (foundation walls may remain intact and form part of a void), locations near chimneys or fireplaces, voids under floors which have not entirely collapsed, intact rooms having exits barred by debris, and voids created by heavy furniture or machinery.

It is impossible to put too much emphasis on the importance of searching areas for victims who may still be alive, and the importance of effecting their speedy release before making any attempt to rescue victims with much less chance of survival. Before deciding which of the several victims should be rescued first, the position of each victim and the work involved in the rescue should be considered in relation to the position of the others and the difficulty of extricating them. The ideal procedure is, of course, to carry out both tasks simultaneously, if possible.

Stage III

Locating casualties using the hailing system--Place rescuers in calling and listening positions. The rescue officer in charge of the operation calls for complete silence. Silence is very important so the rescuers can concentrate on listening for the faintest sound from victims buried in the rubble.

Going "round-the-clock," each rescue member calls out or taps some object. All others listen to determine a "fix" on any sound they may hear. There should be a short period of time for listening between instances of calling or tapping. After any sound has been picked up, at least one additional "fix" should be attempted from another angle. This should minimize the possibility of making a mistake in locating a casualty, as the source of the sound coming from beneath the rubble may be deceptive.

Once communication has been established with a victim, it should be maintained continually. This keeps the victim's morale up, helping him/her withstand pain and discomfort. It also helps rescuers work in the right direction. The victim may be able to give warning of any movement of debris likely to cause further injury and to give direction and advice, helping to preclude any indiscriminate movement by rescuers.

RESCUE

The rescue function begins with an evaluation of compromised areas, structural stabilization, and access. The rescue process then involves the extrication of victims using a variety of tools appropriate for the task.

The term "Golden Day" describes an 80-percent survival rate for victims extricated within 24 hours. A well-organized and rapid response is critical to the success of the rescue operation.

The factors involved in prioritizing rescue opportunities include

- victim viability and longevity;
- degree of difficulty and duration;
- rescue outcome potential (multiple victims versus single); and
- safety considerations (rescuers and victims).

Tactical Considerations

Evaluating Rescue Opportunities

The critical responsibilities of the rescue team managers and squad officers are to determine, evaluate, and prioritize rescue extrication operations involving live, trapped victims. There are generally five phases of rescue operations at collapse incidents.

1. Phase I: Assessment of the collapse area. The area is searched for possible victims (surface and/or buried) and the structure's stability and potential danger to rescue personnel is evaluated. All utilities must be evaluated and shut down for safety.

2. Phase II: Removal of all surface victims as quickly and safely as possible. Extreme care must be used during this phase to ensure that rescue personnel do not become victims. Personnel should not be misled by the outward appearance of the structure. What appears to be a settled pile of debris could, in reality, lack any genuine support and a secondary collapse could occur.

3. Phase III: Search/exploration of all voids and accessible spaces (created as a result of the collapse) for viable victims. An audible callout system can be used during this phase. Only trained dogs or specially trained personnel should be used in voids and accessible-space searches.

4. Phase IV: Removal of selected debris using special tools and techniques (necessary after locating a victim). It may be necessary to remove only certain obstructions that are impeding access to the victim. Information concerning a victim's location prior to the collapse can be helpful during the selected-debris-removal phase. Information-gathering on other possible victim locations can greatly enhance the operation.

5. Phase V: Removal of general debris (usually conducted after all known victims have been removed). Exceptions would be: 1) when information is obtained that indicates the possible presence of other victims not originally accounted for, and 2) when large amounts of debris are impeding or obstructing operations. The decision to use heavy equipment during this phase must be weighed carefully and seriously, especially when the possibility exists that there are still live victims in the debris.

Rescue Versus Body Recovery

Rescue operations follow a logical sequence of emergency actions. As rescuers take the time to progress through these phases, experience demonstrates that the survival of trapped victims is greatly reduced.

Rescue operations in collapsed buildings are usually difficult, lengthy, and dangerous. Rescuers must weigh the time value scale of their operations. Every possible search method must be employed to locate viable victims before committing to any prolonged rescue operation. Body recovery is not the primary mission.

Degree of Collapse

Degree of collapse can be classified as light, medium, and heavy.

Light

Superficial damage has occurred to the building or structure (broken windows, plaster, etc.). With this type of collapse, victims will most likely self-rescue. Rescue operations are limited, as are the tools required.

Medium

Structural stability for this type of collapse is questionable. Walls may be tilted or fractured and walls or foundations may be displaced. For a medium collapse, victims will need to be located; evacuation and extrication prioritized; and rescue operations implemented. Shoring and cribbing must take place as required.

For a medium collapse, a minimum number of rescuers should be within the building. Standard truck company tools can be used (jaws, rotary-chainsaws, pry bars, airbags, hydraulic jacks, etc.).

Heavy

This is characterized by partial or total collapse of floors, walls, ceiling, or roof. Obvious structural instability exists. Locating victims may require specialized tools or devices. Extrications must be well thought-out and must consider hazards, equipment, time, etc.

Truck company tools, Federal Emergency Management Agency (FEMA) US&R equipment, and available heavy equipment can be used.

Coordination and safety must be emphasized.

Potential for Further Collapse

When an earthquake or other natural disaster collapses a building, a driving force has overcome the strength of the building materials and its connecting points. Normally, walls support the weight of floors and roofs. As shifting occurs, weakening or complete collapse of floors, walls, roofs, and ceilings may occur. Further collapse may occur with normal settling, aftershocks, or rescue operations involving lifting, cutting, and prying. Rescuers must be aware of their surroundings:

- the age and condition of the structure;
- walls out of plumb;
- beams separated from walls;
- large cracks or openings;
- overloading of specific areas; and
- noises and vibrations.

Shore and crib or take other appropriate actions to mitigate the potential for further collapse.

Building Type/Construction

Identifying hazards after a structural collapse is difficult. Varying types, styles, and configurations, ages, and uses of buildings only complicate rescue considerations. Rescuers must identify all possible hazards and options.

- six-sided assessment of the hazards involved;
- basic knowledge of the building's construction, characteristics, weaknesses, and strengths;
- awareness of materials used within the construction; and
- collapse patterns and creation of voids within different types and styles of construction.

In general, be aware of three types of hazards within any type of construction:

1. Falling.

2. Collapse.

3. Hazardous materials, natural gas, etc.

Rescue Techniques

One or any combination of rescue techniques may be used for a rescue operation:

- shafting/tunneling;
- trenching;

- breaching walls/floors; and
- support of structure/shoring.

Selection of technique varies with the structural conditions and problems, hazards, equipment manpower availability, and the overall safety of rescuers.

With all of the above techniques, follow some general rules:

- be aware of surroundings;
- shore often and properly (lives may depend upon it);
- attempt to leave open a quick means of egress or safety;
- back rescuers up for safety and relieve often;
- plan, coordinate, and communicate; and
- make safety the watchword.

Shafting/Tunneling

- Ensure adequate amounts of available cribbing and shoring materials.

- Ventilate if within a confined space or if the space is oxygen-deficient.

- Evaluate soil or debris stability and conditions.

Trenching

- Use the same precautions as above.

- With use of heavy equipment or tools, consider vibration and exhaust.

- Wear lip protection.

- Use tag lines and limit personnel to qualified and trained rescuers within the trench.

Breaching Walls and Floors

- Consider the consequences of debris falling upon victims and the reduced integrity of walls and floors.

- Use the proper tools for the job.

- Consider possible electrical and/or hazardous atmospheres.

- Remove debris to create a safe working environment.

Support of Structure (Shoring)

Sufficient shoring and cribbing materials must be available. Use the site as a resource and acquire materials that are flat and can support the weight. Form an equipment and resource pool along with a nearby cutting station.

Shore often, properly, and with solid materials from a surface that can withstand the pressure and weight of the supported area.

RESCUE OPERATIONS

The operational plans for a FEMA US&R Task Force upon arrival at an incident are explained below. The functions that take place are useful for any structural collapse operation.

When a task force arrives at an assigned site location, it may find a variety of complex situations that could range from a single-site disaster (i.e., collapse of one major structure or a disaster area small in size) to a large multisite emergency. The management and coordination of the task force will depend upon the situation(s) and needs at the location, coupled with the available local resources and the progress that has been made (if any) to that point. The source of information should be the IC of the local jurisdiction.

At times, it may be necessary for the task force to begin rescue operations in one of the middle phases. In all likelihood, local emergency response personnel will probably have completed at least the first two phases prior to the arrival of a task force. Thus, in the event that a trapped victim has been located in a void, rescue operations may begin during Phase III or IV, depending upon the conditions at the site. When this occurs, the Rescue Officer in Charge (OIC) must ensure that all personnel involved in the operation are aware of all actions taking place. Any time rescuers are working in voids or accessible openings, all work in progress above, below, or around the site should cease until rescuers and victims exit the void or opening. Proper communications must be maintained, both horizontally and vertically, in the task force organization, during these operations.

The most perplexing strategic decisions will probably involve choices among multiple rescue opportunities, with the number of opportunities surpassing the rescue resources of a task force. In this situation, task force management personnel should prioritize rescue opportunities. Personnel safety and the benefit of the greatest number of people should be the guiding principles. This would involve factoring in victim viability and longevity, degree of difficulty and duration of each rescue opportunity, possible end results of rescue efforts (e.g., a single-rescue operation yielding the extrication of two or more victims, etc.), and safety considerations for rescue personnel (e.g., some sites may prove too dangerous to conduct rescue operations). These factors must be evaluated all together to arrive at the best possible rescue prioritization.

Decisions regarding personnel deployment and commitment (e.g., shift rotations or full-scale "blitz") must be considered, as must the integration of local and military personnel and/or convergent volunteers into the multiple-rescue operations.

Rescue Integration in Search Activities

Task force rescue personnel may be required to assist the canine and technical search personnel with search-and-recon activities. This may include safety assessments at collapse sites, gaining access to voids and other difficult areas, deploying equipment, conducting physical search operations (either separately or in conjunction with the canine/technical search operations), etc. Certain search operations may require shoring/stabilization operations prior to entry. In addition, either individual void inspections or combined listening operations can be conducted, as necessary. These combined operations would be coordinated between the search team and rescue team managers in conjunction with the rescue squad officers or other appropriate task force personnel.

Rescue personnel may be most effective using electronic viewing equipment (fiber optics, search camera, etc.), in conjunction with concrete hammer/drills, for pinpointing the exact location of victims. This combination may also be used for general void searches within collapsed buildings. Past experience has shown success with rescue personnel drilling an array or series of holes (in a floor or wall, for example) and one or more operators following along with the electronic device(s) making quick assessments through the drilled holes.

The task force staffing within the search element provides two technical search specialists. These personnel will usually use the electronic acoustic/seismic listening devices as their primary tool. Other task force personnel (preferably rescue personnel) may be required to assist the technical search specialists and also act in the overhead function to ensure overall safety.

Another general classification is physical search operations. This includes deploying personnel over and around a collapse site. Rescue personnel may be deployed to make separate visual assessments in voids and confined space areas for any indication of victims. They may also be used in a coordinated fashion as an array of listeners. A bullhorn or hailing device is used to provide direction to trapped victims. The area is then silenced, and personnel listen and attempt to pinpoint the location of the noise. This operation is less exacting than the others and poses a significant risk to the personnel involved in the operation.

In all cases, personnel conducting search operations should sketch the general features of the structure/area being searched, noting any significant information on the sketch for future reference. This information should be forwarded to the task force managers. Rescue personnel may be used to staff one or two search-and-reconnaissance teams.

Rescue Site Management and Coordination

As rescue opportunities are identified, it is important that rescue personnel adhere to a consistent, formalized site management procedure to ensure the safe, effective operation of the rescue squad(s). The following considerations should be addressed.

Size-up actions and site control activities should occur simultaneously. The Rescue OIC should review the situation and safety issues and begin formulating a plan of action to effect the rescue. Assistance may be required from the structures and hazardous materials specialists. At the same time, the remaining rescue specialists should begin to take firm control of the immediate site. This should include

- **Hazard assessment and mitigation**. This could be as simple as removing tripping hazards, boards with exposed nails, etc., as well as evaluation and shutoff of utilities, or other necessary actions. The shutdown of all utilities is mandatory, especially when personnel are operating on or in the collapse hazard zone. This important aspect of rescue operations must always be emphasized.

- **A collapse hazard zone (hot zone)** should be established around the compromised structure.

- **The rescue work zone should be clearly defined**.

- **All bystanders should be removed** from inside the cordoned-off work zone.

- **An equipment assembly area and cutting workstation should be organized** at an advantageous location inside or adjacent to the cordoned-off work zone.

- **Sizeup and site control activities** should be completed before rescue operations begin.

Once the sizeup is completed and the plan of action is developed, conduct a short team briefing. Make a "thumbnail" sketch of the site features and rescue operation. This can be drawn quickly on a legal pad or reusable marker board, and can be used to apprise all personnel involved in the operation of the plan of action. In this case, a picture is certainly worth a thousand words. The team briefing will improve the operation and team effectiveness, allowing all personnel to understand what is to be accomplished and to plan ahead for the required tools, materials, and tactics. In addition, safety considerations, structural concerns, hazard identification, emergency signaling, and evacuation procedures should be addressed at this time. The Task Force Operations Report may be used for this purpose.

As stated, each functioning rescue site must have a clearly designated Rescue OIC (and Rescue Safety Officer if required) for effective site management and coordination.

Rescue Worksite Setup

In order to ensure safe and effective rescue operations, the responsible Rescue OIC must establish control of the area immediately surrounding the selected worksite. This is done for two primary purposes:

1. To provide a collapse/hazard safety zone (hot zone).

2. To provide an operational work zone for the task force personnel assigned to the site.

A **collapse/hazard safety zone** (hot zone) is established to control all access to the immediate area of the collapse--the area that could be affected by further building collapse, falling debris, or other situations (e.g., aftershocks) hazardous to personnel. The only individuals allowed within this area are the primary task force personnel directly involved in search for or extrication of victims. All other task force personnel must be located outside the hot zone until assigned or rotated. The collapse/hazard zone will be identified by an X-type cordon of flagging or rope (crisscrossed).

An **operational work area** is established to control access to the rescue worksite--except for assigned task force members, military personnel, volunteers, and other local rescue personnel involved in an operation--and to provide safe and secure work areas for the personnel supporting the rescue operations. The operational work area will be identified by a single horizontal cordon of flagging or rope.

Rescue Site Setup

When establishing the perimeter of the operational work area, the needs of the following support activities must be provided for and properly identified.

- Operational post--Area used by the Rescue OIC assigned to manage and coordinate all US&R activities at the identified rescue site.

- Medical treatment area--Location where the task force medical team can set up operations and provide treatment to task force members and extricated victims. Medical team personnel must identify their space requirements to rescue personnel when this area is being established.

- Personnel Staging Area--Where unassigned task force members can rest, eat, and be immediately available in case the assigned rescue workers become trapped or when needed in the rotation.

- Rescue equipment Staging Area--Where assigned tools and equipment can be safely stored, maintained, and issued as needed to support the operation. An appropriate area should be identified where generators and other gasoline-powered equipment can be set up and operated without exhaust gases and excessive noise hindering the operation.

- Cribbing/shoring working area--Where building materials/lumber can be stored and processed as needed to support the onsite search-and-rescue operations.

- Access/Entry route(s)--One or more clearly defined avenue should be planned and identified for access to and from the rescue worksite. Personnel, tools, equipment, and other logistics needs are safely channeled through this route (in addition, controlled egress is available when required to evacuate a victim or injured task force member quickly).

Give consideration to the security needs and environmental protection (tents/tarps) for the tools, equipment, and comfort of the assigned personnel and victims.

Rescue Site Personnel Use

Effective use of task force personnel is a major element of the tactics necessary for productive rescue operations. It is imperative that all personnel clearly understand the Command structure (those designated as Rescue OIC or other management positions on the rescue site) and their duties and responsibilities.

Rescue assignments for task force personnel generally flow down through the Chain of Command (e.g., 1) the task force leader assigning worksites to the team manager, 2) the team manager specifying areas of responsibility for subordinate task force personnel). Assignments may vary from single-site operations to multisite operations. The rescue team manager should designate one of the rescue squad officers as the Rescue OIC of any operation requiring the assignment of two (or more) rescue squads to a single, complex operation. The alternate rescue squad officer should assume the position of rescue safety officer.

The assignment of rescue personnel is the responsibility of the Rescue OIC and must be understood clearly by all team members. At times, considerations requiring rescue team responsibilities and assignments must be based upon the challenges being faced and the qualifications and expertise of the team members. Effective use of team personnel must be the prime consideration of the officer making assignments.

Some operations in which rescue personnel are involved in victim search or extrication may pose the threat of secondary collapse on the rescue personnel (e.g., working in the collapse "hot zone," below-grade operations, operating in voids or accessible openings, etc.). In these situations, a standby rescue team must be stationed at the designated Personnel Staging Area in a full state of readiness, in the event that rescue personnel become trapped or require other assistance.

At least one rescue specialist should be assigned to the Rescue Equipment Staging Area at the rescue site. The rescue squad officer should appoint this position at the time of the initial squad briefing, prior to beginning rescue operations. Procedures for accountability of equipment are conducted in accordance with the Property Accountability and Resource Tracking System. In the event that a request is made for the loan of tools or equipment to other than task force

members, the designated Equipment Staging Area manager will make proper notifications and documentation, and ensure followup for the return of the items.

INTERDISCIPLINE COORDINATION

As the rescue team managers and squad officers focus on the appropriate tactics and procedure related to victim extrication, they must also address the interrelationship of other task force disciplines in the ongoing operations. These would include the following:

Structure Specialists

These people must be involved in ongoing rescue extrication operations, especially those involving significant cutting, breaching, moving, and lifting operations. The Rescue OIC should request structural assessment assistance in the development of the rescue plan of action initially, and receive periodic review during the course of the operation.

Hazardous Materials Specialists

They should assist search-and-rescue personnel with initial site analysis prior to search or rescue operations. This would include identification of any hazardous products, as well as evaluation of the general atmosphere around and within the involved structure. Periodic review may be necessary during extended operations.

Medical Specialists

These individuals provide medical assessment, intervention, and stabilization which are essential to the survival of the trapped victims both during and after extrication. Rescue personnel should ensure that Medical Team personnel have access to the victim as soon as possible. This may require temporary cessation of rescue operations. The benefits of immediate medical intervention and stabilization of the victim greatly offset the disadvantages of any time lost.

Of significant importance is the coordination of any actual weight removal from live, trapped victims. This must be closely coordinated with the medical personnel. The effects of crush syndrome, whereby toxins and other byproducts of restriction of blood flow are suddenly released into the victim's system, can quickly lead to death. Medical intervention and appropriate IV therapy can offset this condition.

Medical personnel are also responsible for monitoring all personnel involved in the operations for excessive critical incident stress, exhaustion, water intake and hydration, injuries, and any other conditions that may require intervention.

Heavy Equipment and Rigging Specialists

These people may provide recommendations that should be considered during rescue operations requiring the integration of cranes, large-scale lifting operations, heavy equipment movement, etc. In addition, the heavy equipment and rigging specialists must act as liaisons between the rescue squads conducting the rescue and the non-task force equipment operators, who may not fully understand the subtleties involved.

Technical Information Specialists

Services provided by these people should, in certain situations, be requested by rescue team officers to document significant aspects of a rescue. This process may include both still and video photography of operations, as well as collection of information (e.g., building plans, capturing timeframes of the duration of operations, exposure records for rescue personnel, etc.).

Rescue team officers may have to integrate the services of other non-task force personnel into ongoing operations. This may include local utilities personnel (gas, electric, water), law enforcement, military, and convergent volunteers. The assistance of these entities should not be overlooked when needed.

SITE/PERSONNEL SAFETY

Safety of the task force personnel is the single most important consideration during mission operation. Rescue team officers must ensure that this remains so throughout rescue operations and the mission in general. This prioritization covers not only the input and advice of the technical team specialists as outlined, but the development of rescue action plans, choice of tactics, and management and coordination of operations. At a minimum, the following considerations should be addressed for rescue operations:

- The assessment of relative safety of personnel operating around collapsed or compromised structures is, at best, difficult. This assessment must be maintained continually throughout rescue operations. Safety and hazard identification issues must be addressed in the briefings conducted prior to any operations. Personnel hazards and mitigation should receive top priority in the briefings.

- Emergency signaling and evacuation procedures must be understood and immediately recognized, not only by task force personnel, but by all others (heavy-equipment operators, military personnel, local utility, and emergency workers, etc.) assisting in the operations. Effective emergency signaling and evacuation procedures are essential for the safe operation of all personnel operating at the disaster site. These procedures must be clear and universally understood by all task force personnel and others involved in the operations. Air horns or other appropriate hailing devices should be used to sound the appropriate signals:

- Cease Operation/All Quiet	one long blast (3 seconds)
- Evacuate the Area	three short blasts (1-second each)
- Resume Operations	one long blast and one short blast

- Personnel rest and rehabilitation (R&R) is fundamental to the safe, effective, and sustained operation of the task force. Task force deployment and personnel work cycles must be determined, enforced, and continually reassessed by the task force managers, as previously discussed. In addition, it is incumbent on all personnel to understand, and maintain a constant awareness of, the need for water, food, and rest. Team managers and rescue squad officers must evaluate the need of their personnel, integrate these requirements into the ongoing operations, and ensure that all personnel comply accordingly. The rotation of personnel out of ongoing operations to address these issues should be handled on a scheduled basis and not at their own discretion. Fluid and food intake, as well as rest periods and sleep cycles, are vital to the safety and effectiveness of all personnel.

- Team managers and rescue squad officers must also maintain an awareness of and monitor personnel for the mental stresses involved in disaster operations--critical incident stress. Medical team managers and specialists are directly tasked with assessing this effect in all task force personnel during mission operations. Critical Incident Stress Management (CISM) or defusing intervention may be required.

- Task force managers must maintain a constant awareness of the detrimental effects of fatigue on the effectiveness and capabilities of all task force personnel. Taking into account mobilization, travel, and setup activities, personnel may be operating at reduced efficiency (possibly 70 to 50 percent or less) quite early in the mission. Also, a single-rescue operation can easily span 8 to 10 hours or more. In addition to the physical fatigue, it is equally important to understand that mental acuity is affected: Decision making abilities are slower and making decisions is more difficult.

- Rescue officers and personnel should request or offer advice and reassessment of each other's concerns. Team and/or squad "pep talks" (regrouping) may be required during prolonged operations to redefine responsibilities and ensure that the squad's focus is maintained on the plan of action, management structure, and safety considerations.

- Hygienic considerations must not be overlooked during mission operations. This includes not only the personal hygiene of all task force members, but exposure to and/or contact with victim body fluids, inhalation or ingestion of dusts and contaminated atmospheres, water, etc., and minor injuries. Medical team managers and specialists must be prepared to address these issues, including cleansing and treatment. All task force personnel must ensure that they maintain a ready change of clothing and that they adhere to the proper use of all personal protective equipment (PPE) and clothing.

- Task force managers must understand all procedures related to the treatment and/or transport of task force personnel sustaining injuries during rescue operations.

MEDICAL

The medical function provides for initial care of victims rescued from collapsed structures. Rapid intervention for those trapped in the collapse is critical to their survival. Special medical techniques may be required for the victims, such as crush syndrome treatment.

Paramedics and emergency medical technicians (EMTs) trained in structural collapse rescue may need to enter the rescue zone to provide early care for trapped victims. They must also be available to provide treatment for rescue personnel.

A medical sizeup is important in developing the response plan. Factors include

- number, location, and condition of survivors;
- short-term versus long-term survival potential;
- hazards and environmental conditions; and
- on-scene medical and hospital capability and availability.

For deceased victims, response is required by law enforcement, coroner, or medical examiner.

Medical Operations

Structural collapse situations produce rescue problems not routinely encountered by EMS personnel. Furthermore, prior to and during the actual rescue, trapped victims require special medical management of their injuries and illnesses.

Crush injury and crush syndrome, along with other problems, are common in trapped victims of collapsed structures.

Postextrication medical deterioration and death occur from potentially treatable issues associated with crush injury and crush syndrome. These injuries are a primary reason to provide the victim with prompt and continued care even before extricating him or her from the collapsed structure.

The goal is to rescue the patient, who returns to full preinjury level of function, and to have all the rescuers return home safely.

Through proper training and discipline, we can accomplish our goal. We must learn to recognize early the medical problems that exist in collapse and to be aggressive with our treatment. Whether it be as a result of trench collapse or structural collapse, crush syndrome, without early recognition and aggressive treatment, is the cause for patient deterioration.

Most important, however, we must have discipline to maintain safety at all times. Do not be in a hurry. Do a thorough sizeup, recognize the hazards, and maintain safety throughout the rescue.

Definitions

Direct Mechanical Crush

- mechanical disruption of tissue secondary to severe force; and
- immediate cellular effect/injury.

Crush Injury

- muscle cell disruption due to compression;
- time/pressure relationship; and
- understanding of the cellular mechanism of injury controversial.

Compartments Syndrome

- crush injury caused by swelling of tissue inside confining fibrous sheath of muscle's compartments; and
- causes further destruction of intracompartmental muscle and nerves.

Crush Syndrome

- The **systemic** manifestation caused by crushed muscle tissue.
- Occurs when crushed muscle is released from compression.
- Muscle tissue extremely vulnerable to sustained pressure.
- Compression may be caused by debris or by the patient's own body weight, especially if lying on a hard surface.
- Timeframe until crush injury depends upon the amount of pressure and patient factors:

  - As short as 1 hour if compression is severe.

  - Four to six hours more common period for significant crush to occur.

  - Amount of tissue required to cause crush syndrome variable.

  - Usually lower extremities, buttocks, or entire upper extremity/pectoral area.

EXTRICATION (MOST DANGEROUS FOR RESCUE AND MEDICAL REASONS)

In most cases, extrication is a lengthy process. Many decisions have to be made. In making these decisions, teamwork is the greatest tool for success. The following are some aspects to evaluate to help make a successful rescue.

Rescue Aspects

- Debris unstable.

  The debris can be extremely unstable, making for a dangerous working area. Always be aware of footing. Make clear and safe work areas.

- Equipment activity dangers.

  With many tools and equipment in use, maintaining safety is paramount. Remember: Always evaluate the end result before cutting or lifting.

- Hazmat factors.

  Determine what, if any, types of hazardous materials such as escaping gases, chemicals, etc., might be in the vicinity of the rescue.

- Utilities.

  Utilities must be shut off and associated hazards mitigated (ruptured water, gas, sewer, and electrical lines).

Medical Sizeup

- Time of entrapment.

- Estimated amount of weight. Estimate the amount of weight that the victim is being compressed under.

- Estimated time of release. Take into consideration all factors; the tendency is to fall short.

Medical Aspects

- Incomplete assessment.

Depending upon the entrapment, it can be extremely difficult to assess a victim. Remember the basics--if the patient is talking, there is a lot of information to gather. If only a limb is accessible, check the pulse, skin signs, capillary refill, neurologic signs, hydration/dehydration, etc.

- Entrapment/release causes rapid changes in physiology.

  Remember, when a limb is released, crush syndrome begins to set in. The released limb, in time, can become extremely painful. Continue to monitor the patient.

- Dust.

  Keep the dust to a minimum. Dust problems can occur with the victim very easily. Treat it early with oxygen mask or dust mask. Rescuers can also succumb to long-term respiratory problems. A simple dust mask is an essential piece of protective equipment.

DISASTER VICTIMS AND TIME

The Phases of the Golden Day

- First 3 hours: most live victims rescued.
- Four to 6 hours: most common period for significant crush to occur.
- Twelve to 24 hours: airway, hypovolemia, hypothermia, dehydration.
- Survival declines. Remember, treat the victim before you extricate.

Phases of Trauma Death

- First phase (rapid death).

  Rapid death occurs mostly for one of two reasons: severe crush or asphyxiation.

- Second phase (hours after injury).

  Some of the problems within hours of entrapment are dust, impaction, and hypovolemia.

- Third phase (late death).

  There are usually two reasons for late death: infection and organ failure. The victim stands a better chance of survival from these two problems after early recognition and aggressive treatment. Infection in the field can be treated by early recognition and care of injuries. Organ failure is seen with crush syndrome. Be aggressive and treat early.

DISASTER INJURY PATTERNS

Below are injuries most commonly found in confined space entrapments:

- lacerations;
- contusions;
- fractures;
- multisystem trauma;
- crush injury;
- respiratory injury;
- cardiac problems;
- hypo/hyperthermia;
- psychological factors;
- hypovolemia and dehydration;
- compartment syndrome; and
- crush syndrome.

STAGES OF MEDICAL CARE

Initial Access

- ABCs--this is always first consideration.

- Protect airway--don't forget about the dust problem. Treatment: oxygen mask, dust mask.

- Bleeding control--stop the bleeding and remember infection.

- Psychological support--this is a very important aspect that is sometimes overlooked. Remember, the victim is depending on you to get him/her out. The victim will experience feelings of fear and doom. Act professionally and continually reassure the victim.

- Assess for crush injury--consider time of entrapment, estimate amount of weight, estimated time of release. All of these factors, along with patient findings, are to be assessed.

- If crush potential is identified:

  - Basic Life Support (BLS)--you can give water by mouth.

  - Advanced Life Support (ALS)--establish IV access.

  - ALS--undertake fluid replacement prior to lifting compression.

  - ALS--consider prealkalizing with bicarbonate.

- ALS--use cardiac monitor--run a baseline strip.

Secondary Access

- Immobilization.

  When possible, don't forget the collar and spinal immobilization. Also, fractures must be splinted and stabilized.

- Hypo/Hyperthermic.

  This can depend on weather conditions, but don't be fooled. Victims in confined spaces, especially for long periods of time, can become either hyperthermic or hypothermic.

Long-Term Care

Victims of confined space may be in your care for hours. One important thing to remember is to take care of your own. It's a good idea to work in shifts when involved in long extrications.

MEDICAL PROBLEMS (IN INDIVIDUAL VICTIMS)

Crush Syndrome

- Caused by compression of limb(s) or body part.
- Membranes of injured cells break down and rupture.
- Cellular contents become available to circulation when crushing pressure is released.

Myoglobin

- Myoglobin is an oxygen-carrying element within muscle tissues.
- Ruptured muscle cells release myoglobin.
- Myoglobin blocks working elements of kidney.
- Myoglobin causes reddish-brown urine in high concentration.

Lactic Acid

Lactic acid is a byproduct of anaerobic metabolism. This is caused by the lack of blood flow due to entrapment. The buildup of lactic acid will cause myocardial irritability and vascular system depression.

Recognizing Crushed Limbs

- Area initially may appear normal.
- Pulses initially may seem normal.
- Neuro may be positive or negative.
- Crushed extremity may be painless.
- Hypesthesia or anesthesia may be present.

Postrelease

- Agitation.
- Continued hypesthesia/anesthesia or severe pain in crushed extremity.
- Muscle function decreased/paralysis.
- Progressively marked swelling of the area.
- Systemic problems.

Crush Injury Diagnosis

- High index of suspicion.
- Identifying potential crush mechanism.
- Looking for subtle signs and symptoms.
- Urinary myoglobin postrelease.

Dust Inhalation

This is the leading cause of death in concrete construction following trauma. Remember, this is also a major hazard for the rescuers. There is a high incidence of respiratory infection unless proper steps are taken (e.g., dust mask, proper ventilation).

Carbon Monoxide Inhalation

This is mostly caused by the operation of gas-powered tools in confined spaces.

Secondarily Induced Trauma

There is a high incidence of secondary injury to the victim caused by the rescuer.

- Walking on debris--Be careful where and how you walk.
- Pulling victim out--Remember, ensure that all limbs are free before you extricate (be patient).
- Location of the patient--Before you begin extrication, try to determine exactly how the patient is situated.

PROVIDING CARE IN HIGH-RISK CONDITIONS

Confined-Space Operations

It is important to determine the location of your safe area. Always leave yourself an out.

- Communication. It is extremely hard to communicate in a confined space. Use all of your options: radio, setting up a relay system, the use of runners, etc.
- Teamwork (the biggest key to success). There's always a different approach to solving a problem. Evaluate all ideas prior to deciding on a course of action.
- Extended operations. Don't forget care for the rescuers. Relieve one another on a continuing basis during an extended operation.
- Environmental extremes.

  - Dehydration--continually hydrate yourself.

  - Hypo/Hyperthermia--rescuers are not immune.

CONFINED SPACE PATIENT MOVEMENT

- Priorities in movement: if multiple limbs are trapped, determine which to release first. Remember crush syndrome.

- Victim packaging:

  - Kendrick Extrication Device,
  - sled,
  - lashing, and
  - improvisation.

It is important to know your equipment and how it works. Practice with what you have and be prepared to improvise.

Historically, patients that have been entombed within a collapsed structure have died quickly following extrication. Victim survival can be enhanced dramatically by early recognition of medical needs and by providing medical care as soon as the victim is reached and then throughout the entire rescue process.

Technical Specialists

These people may be needed if the incident is complex. These people support incident operations. A variety of specialists may be needed. The determination depends on the situation and need for expertise in a given area.

Examples of technical specialists that could be used at a structural collapse incident include

- **Structural Specialists:** These are structural engineers who can evaluate structural conditions and recommend safe access and structural mitigation to minimize risks (they work with rescue team).

- **Hazardous Materials Specialists:** They monitor environmental conditions and implement defensive measures to protect victim and rescuer (they work with search-and-rescue team).

- **Heavy Equipment and Rigging Specialists:** These specialists have expertise in the use of heavy equipment and can interact, advise, and coordinate between heavy-equipment operators and rescue personnel (they work with rescue team).

- **Weather Specialists:** They monitor weather conditions onsite and in region, and provide forecasts during incident operations.

- **Canine Specialists:** They have expertise in the use and care of various types of search dogs and provide recommendations on the use of dogs at an incident.

- **Equipment Specialists:** These specialists may be used to provide recommendations on the use of, or may operate, unique or specialized tools for rescue operations.

Safety

Safety must be the top priority and everyone's job. Safety concerns at a collapsed structure worksite include

- hazard identification and risk analysis;
- incorporating safety into the IAP;
- monitoring operations for safety;
- providing appropriate protection;
- monitoring radio communications;
- enforcing personnel accountability;
- enforcing personnel rotation and rehabilitation;
- monitoring personnel for fatigue and stress; and
- investigating and documenting injuries.

Personnel Safety in Rescue Operations

Safety of rescue personnel is the first priority within all search-and-rescue operations. Members involved must be constantly aware of the numerous factors that must be evaluated and reevaluated throughout ongoing operations.

- Assess the scene.

  Building construction, six sides; evaluate for access, egress, structural stability, terrain, and debris, etc.

- Assess hazards.

  Utilities, flammable liquids, water, flooding, plumbing and sewer, electrical, etc. (Electricity may be reenergized by department of water and power at any time.)

- Assess changing conditions.

  Aftershocks, landslides, weather conditions, flooding, structural shifting, winds, etc.

- Conduct preplanning.

  Operations must be preplanned and personnel trained, qualified, and team-oriented.

  Risks taken by rescuers must be calculated and the possible outcomes must be in favor of the rescuers.

Rescuers must operate in a safe manner at all times; think before acting.

- Deal with fatigue.

  Recognize signs of fatigue, mental and physical, both for you and for other team members.

- Watch out for rescuer safety.

  Never lay short! Safety lines in rope rescue, shoring--frequently and properly; do not go in too deep without a quick means of egress or a safe zone.

- Preposition rescue equipment, in event of a rescuer needing rescue.

SAFE OPERATIONS AFFORD A GREATER NUMBER OF SUCCESSFUL RESCUES

Activity 5.1

Incident Objectives

Purpose

To conduct sizeup of the incident and develop incident objectives.

Directions

1. You will stay in the same teams and use the same scenario from Activity 4.1, the apartment house collapse.

2. Your team should write incident objectives using responses from initial assessment made in Activity 4.1.

3. Each group should transfer the information to an easel pad.

4. A spokesperson from each team will present the list of objectives. The initial resource assignment is three engines, two trucks, and one battalion chief.

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Activity 5.2

Developing Objectives, Strategies, Tactics, and Rescue Requirements

Purpose

To address operational concerns critical to the development of an IAP.

Directions

1. You will complete this activity as a member of the same group used in Activity 5.1.

2. Your group will use the same breakout area used during the last activity.

3. This activity will **build on** the scenario given to you in Activity 5.1. The groups in this activity will be accomplishing activity tasks; your group should respond from the perspective of the IC.

4. Your instructor will go over additional scenario details as used in Activities 4.1 and 5.1.

5. Once relocated in your breakout area, your group will do the following:

   a. Elect a group spokesperson.

   b. Divide your group's easel pad paper into two columns.

      - In the column on the left, build a list of initial incident objectives. (Objectives are to be in response to the problem/situation--e.g., search first, second, and third floors.)

      - In the column on the right, list **how** each objective will be implemented (what resources will be used).

   c. Build a separate list of specialized equipment needs.

   d. Develop an ICS organization chart (based on incident complexity and resource availability).

6. At the conclusion of the allotted time, the instructor will reconvene the class.

7. Each spokesperson will have 5 minutes to report the group's answers to the entire class.

8. The instructor will assist and clarify key points.

Additional Scenario Information

- Resources assigned: three engines, two trucks, and one battalion chief. Maximum resources available for exercise (first 2 hours of response): eight engines, four trucks, one heavy rescue, four ambulances (two Advanced Life Support (ALS) and two Basic Life Support (BLS)), three battalion chiefs with aides, one police sergeant, six police units, and one police search dog.

- An estimated 40 units on first floor are heavily damaged under a pancake collapse.

- Many victims are trapped on the first floor and require extrication (estimated 80 to 100 people).

- Many victims are trapped and injured on the second and third floors (estimated 150 to 200 people).

- There have been two large aftershocks, causing additional collapse.

- Some cars in the garage are leaking gasoline.

- Weather reports the temperature rising to 95 °F (35 ºC) today.

- Additional resources will be delayed due to widespread damage.

- Floor construction is lightweight concrete over plywood.

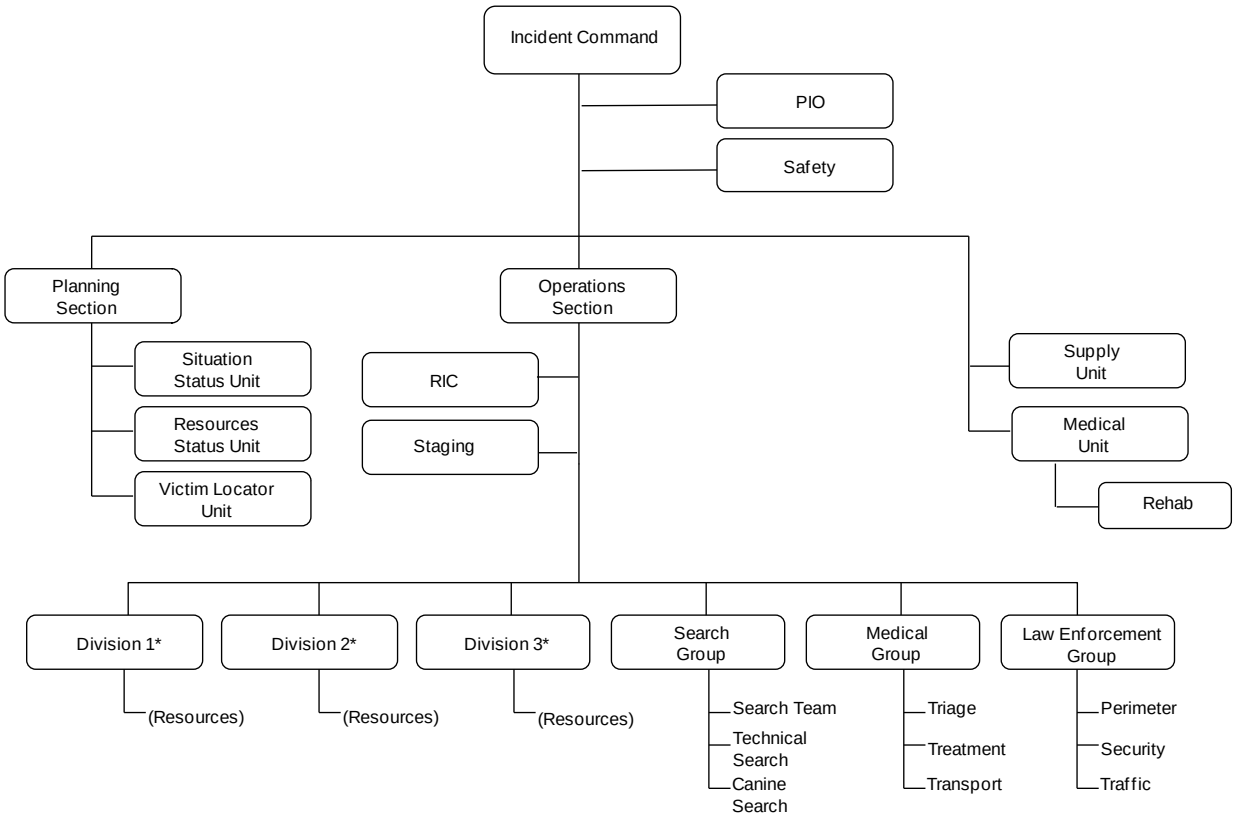
- There are a large crowd and news media at the scene.

- Staffing levels:

  - three per engine,
  - four per truck,
  - four per heavy rescue,
  - two per ambulance, and
  - two per police unit.

Activity 5.2 (cont'd)

Possible ICS Organizational Chart



* Note: Could be Division A, B, C, D, etc.

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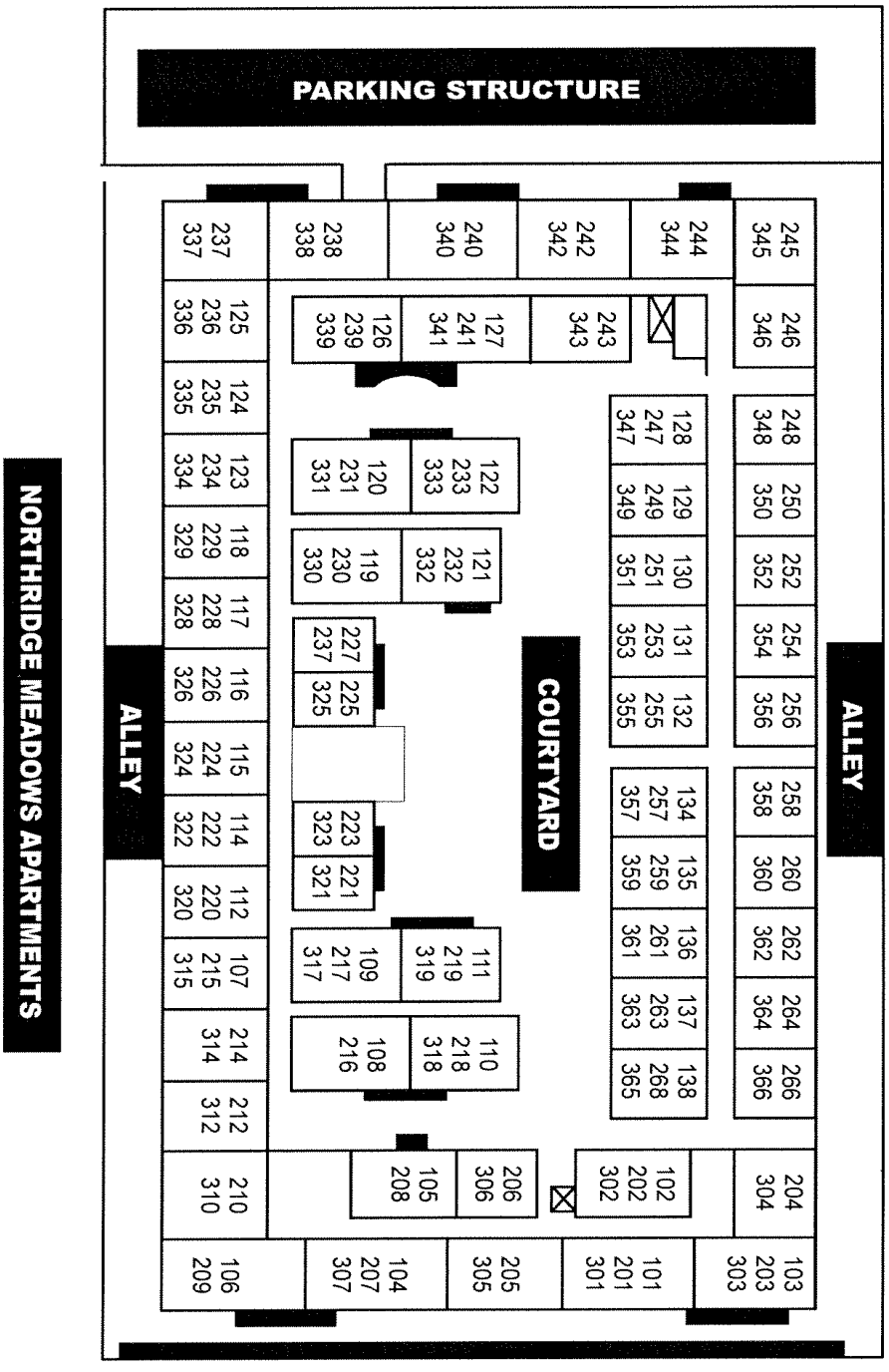
Activity 5.2 (cont'd)

Building Floor Plan



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NOTE-TAKING GUIDE

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NOTE-TAKING GUIDE

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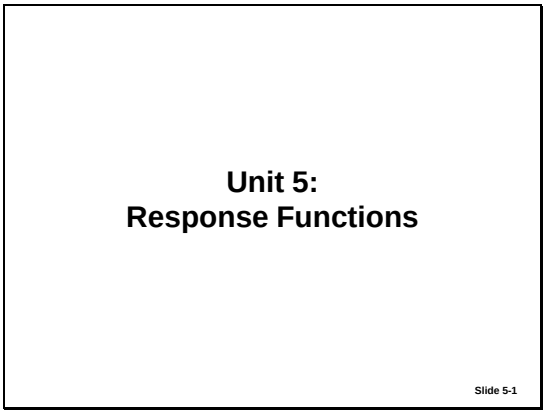

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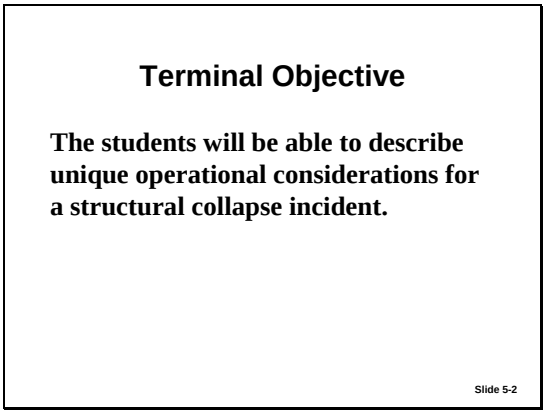

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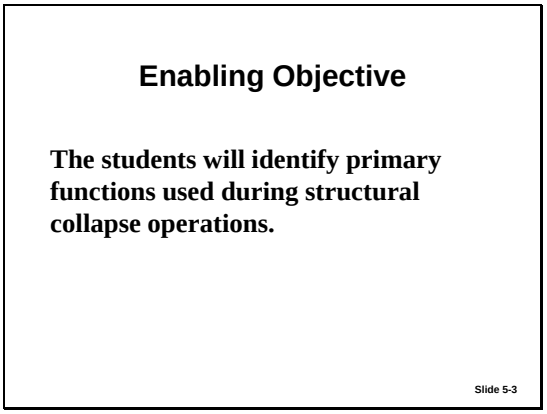

Slide 5-4

Introduction

The Incident Commander (IC) must be able to:

- **Analyze an incident accurately**
- **Develop appropriate objectives, strategies, and resource requirements**

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Response Functions

Command and coordination involves

- **Obtaining incident information**
- **Analyzing intelligence**
- **Developing and selecting objectives and strategies**
- **Prioritizing objectives:**
  - **Life**
  - **Property**
  - **Utilities**
  - **Environment**
  - **Situation**

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Slide 5-6

Incident Objectives

- **Objectives are brief action statements of what needs to done.**
- **Objectives should be specific, measurable, action-oriented, reasonable, and have a time element involved.**

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Activity 5.1
Incident Objectives

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Response Functions (cont'd)

Command and coordination involves (cont'd)

- **Setting objectives and developing strategies**
- **Determining resource requirements.**
- **Tasking resources**
- **Identifying logistic requirements**
- **Developing Incident Command System (ICS) organization**

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Response Functions (cont'd)

- **Preparing and implementing an Incident Action Plan (IAP)**
- **Deploying resources**
- **Evaluating progress toward objectives**
- **Revising plan (as needed to accomplish objectives)**

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Slide 5-10

Search

- **Locate victims.**
- **Use technical search equipment or dogs (as needed).**
- **Take a systematic approach (which enables the IC and rescue teams to increase efficiency and reduce injury).**

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Rescue

- **Safety of rescue operations**
- **Compromised areas**
- **Structural stabilization**
- **Access**

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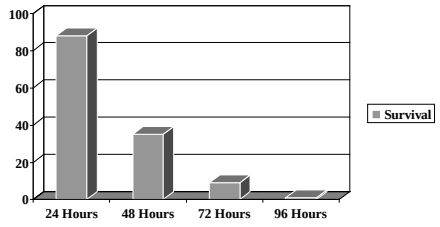
Slide 5-12

The "Golden Day" of Survival

Over 80 percent of victims are rescued within the first 24 hours.



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Slide 5-13

Prioritizing Rescues

Factors include

- **Victim viability and longevity**
- **Degree of difficulty and duration of rescue**
- **Rescue outcome potential (multiple victims versus single)**
- **Safety of rescuers and victims**

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Slide 5-14

Structural Collapse Rescue

Five phases:

- **Phase I--Survey area for victims**
- **Phase II--Rescue surface victims**
- **Phase III--Explore voids and remove survivors**
- **Phase IV--Remove selected debris**
- **Phase V--Remove general debris**

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Rescue Operations

Coordination needs to be made with specialists such as:

- **Structural-collapse engineers**
- **Heavy-equipment operators**
- **Hazardous Materials Specialists**
- **Medical personnel**

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Medical Functions

- **Provision of initial care to victims**
- **Entry of paramedics and emergency medical technicians (EMTs) to the rescue zone (to provide care)**
- **Provision of treatment for responders**

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Medical Sizeup

- **Medical assessment factors include**
  – Number, location, and condition of survivors.
  – Short-term versus long-term survival potential.
  – Hazards and environmental conditions.
  – Onscene medical and hospital capability and availability.
- **Deceased require response by law enforcement, coroner, or medical examiner.**

Slide 5-17

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Medical Care

Victim survival can be improved by recognizing medical needs early and by providing medical care as soon as the victim is reached and continuously throughout the rescue process.

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Technical Specialists

Technical Specialists are needed for:
- **Unique situations**
- **Complex situations**

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Safety

Safety involves
- **Identifying hazards and analyzing risks**
- **Incorporating safety in the IAP**
- **Monitoring operations (for safety issues)**
- **Providing appropriate protection**
- **Monitoring radio communications**

Slide 5-20

Slide 5-21

Safety (cont'd)

- **Enforcing personnel accountability**
- **Enforcing personnel rotation and rehabilitation**
- **Monitoring personnel for fatigue and stress**
- **Investigating and documenting injuries**

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Activity 5.2
Developing Objectives Strategies, Tactics, and Rescue Requirements

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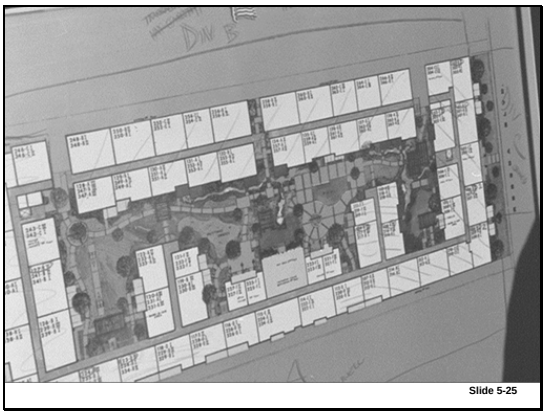

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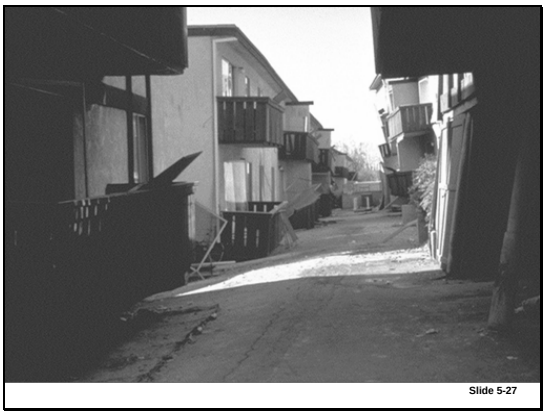

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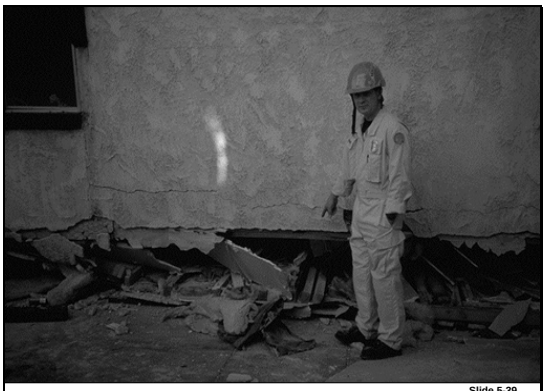

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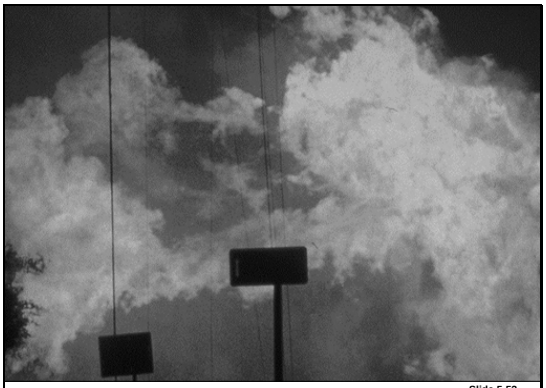

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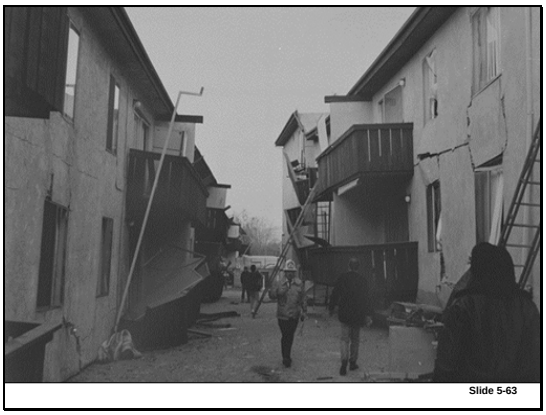

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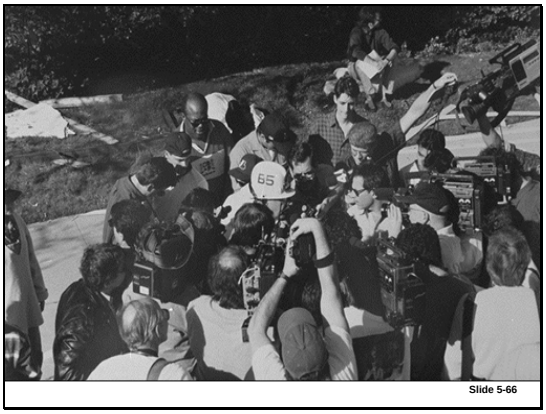

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Summary

The IC must

- **Analyze a collapsed structure incident accurately**
- **Develop appropriate objectives, strategies, and resource requirements to locate and rescue the injured and trapped effectively**

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Summary (cont'd)

The Command and coordination function:

- **Obtains initial incident information**
- **Analyzes intelligence**
- **Develops strategies**
- **Identifies/Develops objectives**
- **Prioritizes objectives**
- **Determines resource requirements**

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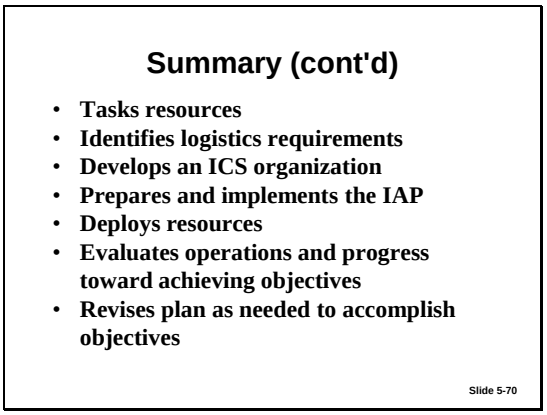
Slide 5-70



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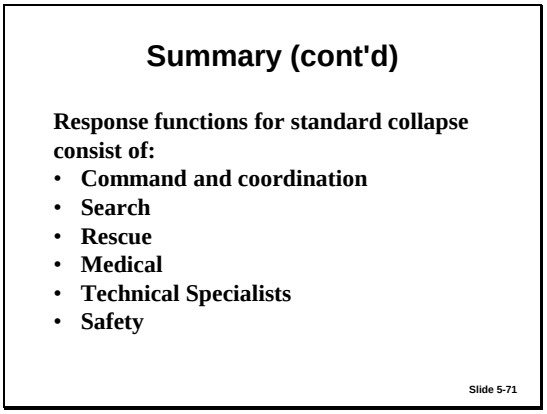

UNIT 6: STRUCTURAL COLLAPSE: OPERATIONAL PHASES

TERMINAL OBJECTIVE

The students will be able to describe all operational phases associated with a structural collapse incident.

ENABLING OBJECTIVES

The students will:

1. *Define five operational phases.*
2. *Describe the conditions that trigger transition of operational phases.*
3. *Demonstrate an ability to develop an appropriate Incident Command System (ICS) organization to command and control a structural collapse incident.*
4. *Identify, request, and apply specialized Urban Search and Rescue (US&R) resources.*
5. *Explain the application of critical scene management issues and factors in the appropriate operational phase.*

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INTRODUCTION

A major structural collapse incident can progress through a total of five phases. **This first phase--the initial response--**involves initiation of the following actions by the first Incident Commander (IC):

- establishing Command;
- conducting a sizeup;
- developing an action plan; and
- deploying resources.

The incident can then proceed to the second phase--the **reinforced response. This type of response** requires a larger incident organization and additional support requirements.

The third phase is referred to as an **extended response** (involving 24-hour operations). This phase requires:

- a detailed Incident Action Plan (IAP);
- augmented organization; and
- an effective coordination system.

These three response phases are followed by **demobilization** (Phase IV) and **return to a state of readiness** (Phase V).

FIVE OPERATIONAL PHASES--OVERVIEW

The response and buildup to a major incident, as well as downgrading, closure, and return to normal activities, can be defined by the following five phases:

- **Phase I:** Initial response;
- **Phase II:** Expanded (reinforced) response;
- **Phase III:** Extended response (24-hour operation);
- **Phase IV:** Demobilization; and
- **Phase V:** Return to a state of readiness.

PHASE I: INITIAL RESPONSE

This initial phase involves the following six actions.

1. **Establishing Command.** This is accomplished by:

    - announcing Command;
    - assuming all Command and General Staff responsibilities;

- providing a brief radio report (i.e., location, type of structure, and situation) to the dispatch center (responding companies should be monitoring this report); and
- establishing an Incident Command Post (ICP).

2. **Performing a sizeup.** Sizeup involves the following tasks:

- surveying the site;
- determining the type of problem;
- identifying hazards;
- assessing conditions;
- determining victim locations and viability;
- identifying exposures; and
- assessing potential for escalation.

The Structural Collapse Operational Checklist (provided in Appendix L) is a good administrative tool to use during sizeup.

3. **Developing an IAP.** Essential steps in action planning are

- understanding the situation;
- establishing objectives and strategy;
- developing tactical direction and assignments;
- preparing the plan (consider using Incident Command System (ICS) Form 201);
- implementing the plan; and
- evaluating the plan.

An IAP helps establish priorities, points out hazards, and reviews items such as risk/benefit and safety.

The initial IAP may involve the use of a form that begins the written plan. The ICS Form 201 (Incident Briefing) may be used for this purpose and as a briefing form for the Transfer of Command to another officer. This form includes a map or diagram of the area involved, incident objectives and actions taken, and the incident organization and resource summary.

4. **Requesting resources.**

Once the IAP is developed and objectives have been established, request the resources required to achieve the objectives. For example, to achieve the objective "search the first and second floor for victims," request an engine company and a truck company.

5. **Deploying and organizing resources.**

- The initial response may include from one to five single resources.

- The ICS organization at an initial response level consists of the IC and the single resources assigned to specific tasks (as illustrated in Figure 6-1).

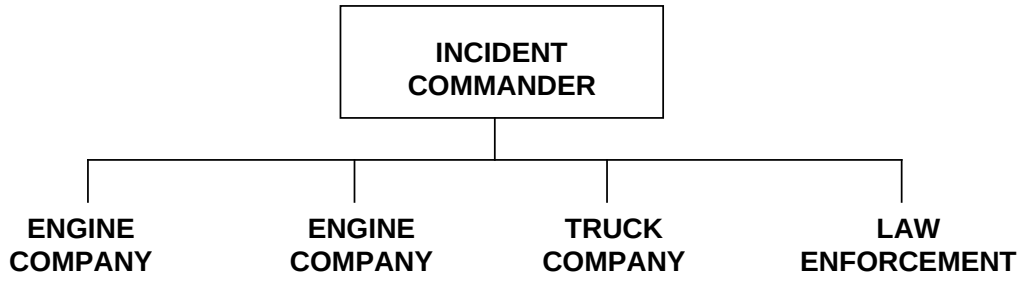

Figure 6-1
Initial Response

- The IC must deploy appropriate resources to the incident in order to accomplish priority objectives.

- Scene management must be initiated early by isolating the area and establishing zones, e.g., "the collapse zone."

6. **Evaluating response.**

   - Evaluation requires accurate information and good communication (status/progress reports).

   - You can determine resource effectiveness from the evaluation by comparing progress to objectives.

PHASE II: EXPANDED (REINFORCED) RESPONSE

An expanded (or reinforced) response is initiated when the IC determines that initial resources are insufficient to handle the incident. The expanded (reinforced) response involves

- **A sizeup.** It must

  - Be continuous,
  - Anticipate the need for an extended operation, and
  - Document information.

- **Transfer of Command.** Transfer of Command may take place during the expanded response phase.

During Transfer of Command, the officer assuming Command communicates with the officer being relieved and a briefing takes place (ICS Form 201 should be used). This briefing covers

- incident conditions;
- IAP;
- progress toward completing objectives;
- safety considerations;
- resource assignments;
- need for additional resources; and
- critical issues.

The officer being relieved is then reassigned and a change in Command is communicated.

- **Evaluating the current situation.** The following factors should be considered during the evaluation of incident operations.

  - What has happened?
  - What progress has been made?
  - How good is the current plan?
  - What is the incident growth potential?
  - What are the present and future resource and organizational capability?

- **Developing a risk management plan.**

  - Hazards need to be assessed and controlled or avoided, and
  - Risks need to be managed.

- **Establishing scene control.** Establishing scene control includes accomplishment of the following:

  - zone establishment,
  - bystander evacuation,
  - controlling perimeters,
  - establishment of site security,
  - establishment of incident facilities,
  - suitable ICP,
  - Staging Area(s), and
  - triage and treatment area.

- **Developing an IAP.** A more detailed IAP may be needed for an expanded response.

  - Clear statement of objectives and strategies,
  - Basis for measuring work effectiveness and progress, and
  - Basis for providing accountability.

Essential plan elements are

- statement of specific, measurable, action-oriented, reasonable, and timely (SMART) objectives;
- description/review of incident organization;
- tactics and resource assignments; and
- support plans (traffic, medical, communications, safety, demobilization, and others as needed).

IAP objectives should always be

- specific;
- measurable;
- action-oriented;
- reasonable; and
- timely.

Dynamic incidents change, so the plan needs to be flexible and broad enough to accommodate change.

Written IAPs should be used when:

- two or more jurisdictions are involved;
- operational periods are required;
- many organizational elements exist;
- IAP is required by an agency; and
- the incident expands beyond the initial response phase.

An example of a multidivision IAP has been included in the Appendix of your SM.

- **Expanding the ICS organization.** The ICS organization may be expanded based on the size and magnitude of the incident. Expansion is based on resource and management needs.

Figure 6-2 illustrates an ICS for expanded response, showing how the system builds, and subsequent resource assignments.

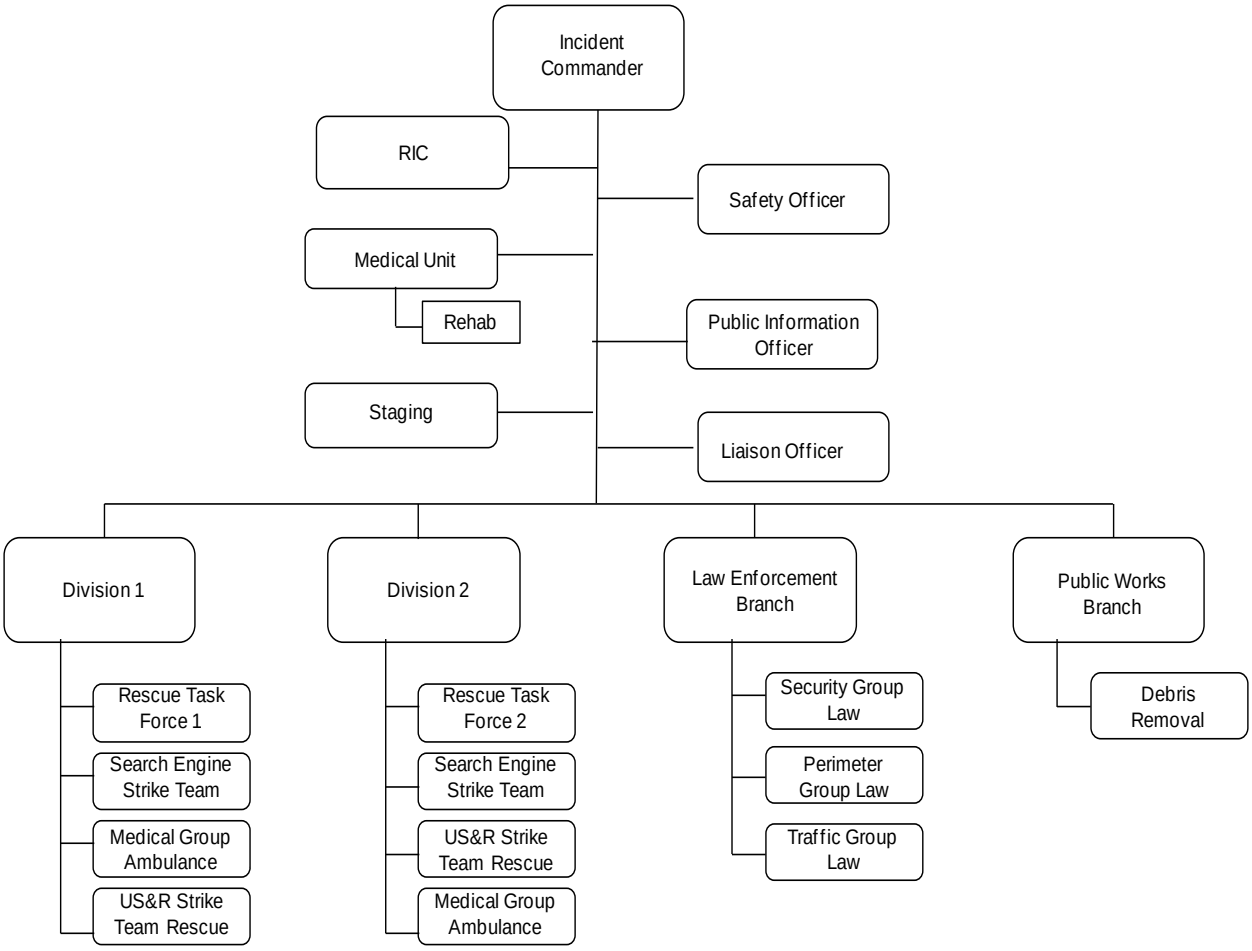

Figure 6-2
Expanded Response

In the example of an expanded response organization displayed in Figure 6-2, the initial response organization has been reinforced with the arrival of additional fire department resources and resources from law enforcement and public works agencies:

- The IC has assigned a Safety Officer to ensure personnel safety and a Public Information Officer (PIO) to work with media.
- A Staging Area has been established to check in arriving resources.
- Public Works has been assigned to debris removal.
- The incident has been divided into two divisions to manage resources better:

  - Original engine and truck companies are grouped together to form one task force.

- Second-to-arrive local engine and truck companies are grouped together to form another task force.

Figure 6-3 illustrates a multigroup/division response that manages span of control with General Staff, geographic, and functional assignments.

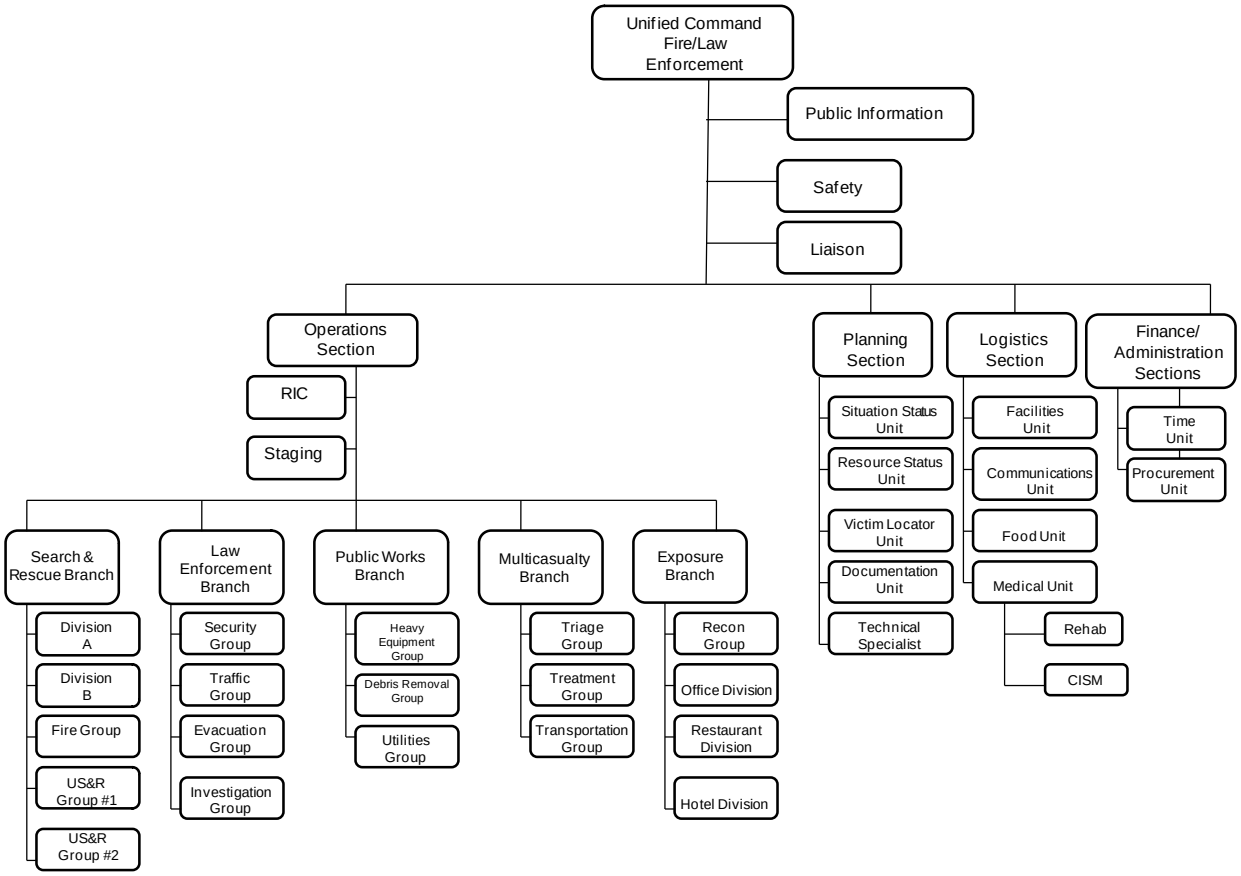

Figure 6-3
Multigroup/Division Response

In the example of the multigroup/divisional response organization displayed in Figure 6-3, the IC has formed a Unified Command (UC) with the senior law enforcement official onscene because of the major involvement of both agencies.

The IC has added

- A Liaison Officer to coordinate assisting agencies.
- An Operations Section Chief (OSC) to manage the tactical operations of a combination of divisions and groups.

- A Planning Section Chief (PSC) to manage situation and resource status units (SITSTAT and RESTAT) and the Technical Specialists assigned.

- A Law Group to handle security, traffic control, and evacuation.

- A Medical Group to handle triage, treatment, patient transportation, and the deceased.

- Several operational elements formed in the Operations Section to improve span of control, management, and coordination:

  - a Structural Specialist to assist in Division B,
  - a Hand Crew Strike Team to remove debris in Division B, and
  - one State/National Urban Search and Rescue (US&R) Task Force assigned to Division A.

- A US&R Technical Specialist has been assigned to the Planning Section.

- Supply Unit and a Ground Support Unit established; Logistics Section Chief (LSC) not yet required.

PHASE III: EXTENDED RESPONSE (24-HOUR OPERATION)

An extended response involves operations over a 24-hour period.

Detailed Incident Action Plan

A detailed IAP is necessary for incidents with an extended response involving operational periods and multiple agency or multijurisdiction involvement. This document is developed by the Planning Section. The plan documents the activities developed for a given period of time and, when all attachments are included, specifies

- specific detailed objectives;
- strategies (to meet those objectives);
- resource assignments;
- incident organization;
- required maps and information specific to the incident;
- a communications plan;
- a medical plan;
- a safety plan; and
- a traffic plan.

The IAP serves as a guide so that operational effectiveness can be evaluated based on the objectives set for the operational period. As work progresses, priorities change based upon a continual evaluation of the incident. Flexibility is important and contingency plans are a necessity in dynamic and hazardous incidents.

Operational Periods

Operational periods are planned time periods needed to achieve objectives. Rapidly changing incidents require shorter operational periods.

The planning process for an operational period involves these 10 steps:

1. State incident objectives.
2. Give situation and resource briefing.
3. State primary and alternative strategies to meet objectives.
4. Designate branch, division, and group boundaries and functions.
5. Describe tactical operations and tactics.
6. Make tactical resource assignments.
7. Specify reporting locations and additional facilities needed.
8. Identify the resources, support, and overhead personnel requirements.
9. Consider additional support resources needed because of communications, traffic, safety, medical, etc.
10. Finalize, approve, and implement the plan.

Logistical Support

Logistic support is critical to maintaining extended rescue operations. An incident of major complexity and size involving possibly hundreds of response personnel requires a Logistics Section capable of meeting the needs of the incident through demobilization.

For example, long-term operations may require

- lighting for night operations or reduced visibility;
- large food and water supplies;
- major equipment repair and supply functions;
- special equipment acquisitions;
- other support functions specific to a structural collapse incident (e.g., heavy equipment, structural stabilization resources, security measures including barricades, fencing);
- coordinated communications and technical equipment;
- expanded facilities; and
- additional facilities for rehab and Critical Incident Stress Management (CISM), air operations, etc.

Incident Facilities

Incident facilities such as the ICP and a Staging Area should be set up early in the best possible locations. Incident facilities used for an extended operation at a major structural collapse may require

- several Staging Areas for specific resources (as an example, one for heavy equipment);
- a large base to accommodate personnel through rehab, rest, and feeding cycles, and vehicle and specialized equipment fueling and repair functions;
- a supply and equipment distribution system;
- an ICP with the capability to sustain a large Command Staff and effective communications;
- a larger triage and treatment area;
- a morgue;
- a decontamination area;
- a secure evidence recovery and holding area; and
- multiple medical units/responder rehabilitation.

Integrated Communications

Communications at the incident are managed through the use of a common communications plan and an incident-based communications center established solely for the use of tactical and support resources assigned to the incident. All communications between organizational elements at an incident should be in plain English, "clear text." No codes should be used, and all communications should be confined only to essential messages. The Communications Unit is responsible for all communications planning at the incident. This includes incident-established radio networks, onsite telephone, public address, and offincident telephone/microwave/radio systems.

Radio Networks

Radio networks for large incidents are normally organized as follows:

- **Command Net.** This net should link together Incident Command, key staff members, section chiefs, and division and group supervisors.

- **Tactical Nets.** There may be several tactical nets. They may be established around agencies, departments, geographical areas, or even specific functions. The determination of how nets are set up should be a joint Planning/Operations function. The Communications Unit Leader develops the plan.

- **Support Net or Logistics Net.** A support net is established primarily to handle status changing for resources as well as for support requests and certain other nontactical or Command functions.

- **Ground-to-Air Net.** A ground-to-air tactical net may be designated, or regular tactical nets may be used to coordinate ground-to-air traffic.

- **Air-to-Air Net.** Air-to-air nets are normally predesignated and assigned for use at the incident.

Extended Incident Command System Organization

The extended ICS organization for a structural collapse incident of major magnitude may require

- an incident organization involving resources from many agencies; and
- a UC organization.

Figure 6-4 shows a multibranch organization chart illustrating how a major ICS may be organized for an extended operation.

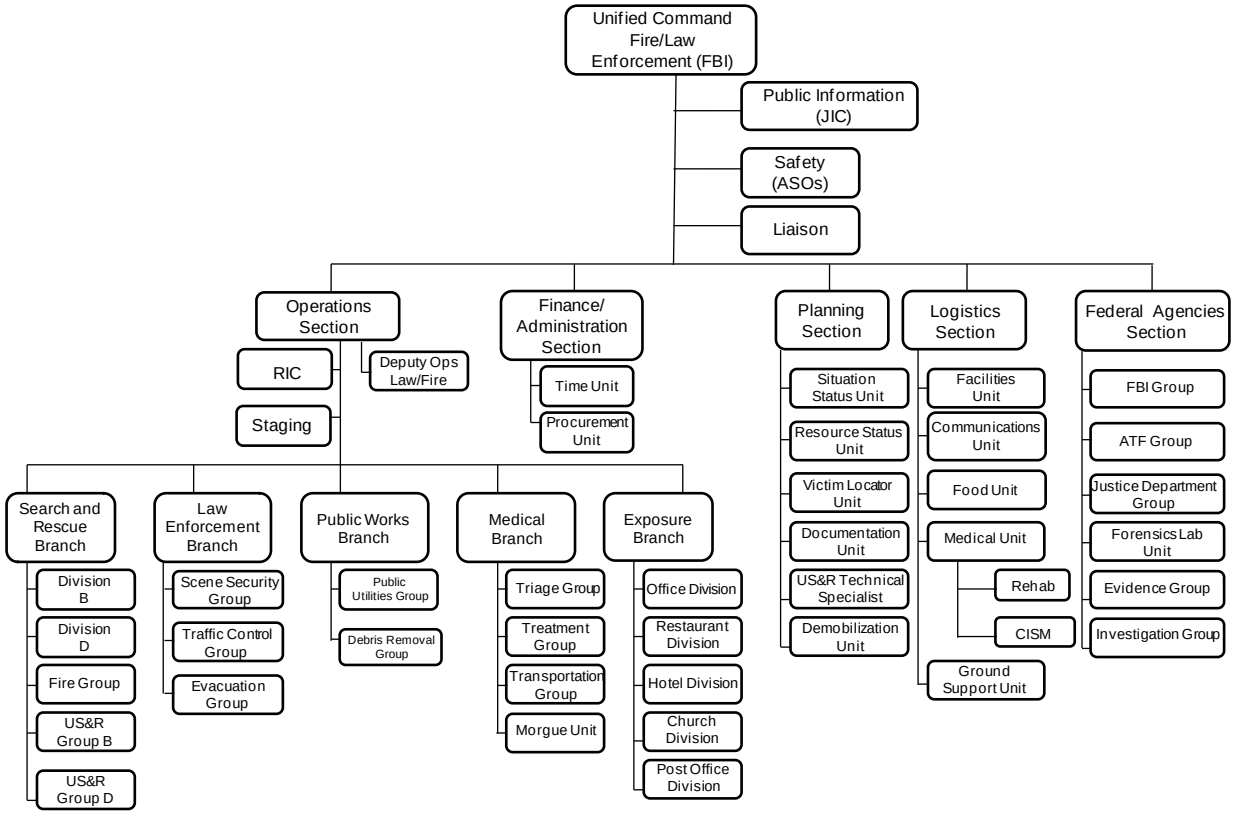

Figure 6-4
Multibranch Response

The multibranch response organization displayed in Figure 6-4 involves an extended ICS organization with UC.

The IC has assigned an LSC and a Finance/Administration Section Chief.

The Operations Section has established five branches with similar functions to coordinate and manage resources more effectively and to maintain an effective span of control.

The Planning, Logistics, and Finance/Administration Sections have several units operational to support the large amount of resources at the incident.

Incident Command System/Emergency Operations Center Interface

An Incident Command/Emergency Operations Center (EOC) interface is needed to provide for effective information flow and coordination between the incident site and the EOC.

- An EOC is a location from which centralized emergency management can be carried out. The activation and level of activity and staffing depend on the size and complexity of the emergency.

- The local government EOC is activated to support field response agencies when needed and to facilitate overall coordination of multiagency operations.

- Local government EOCs serve as the central point for coordination inside and outside the jurisdiction. These EOCs gather and disseminate information and assist in supporting field operational Incident Commands.

- Field-level (ICP) coordination with the local EOC may go through the dispatch center to the EOC--or, in some jurisdictions, the ICS Field Command may have direct communications with or receive policy direction from the EOC. Coordination may be with other agencies, organizations, the media, and citizens inside and outside of the local government involved.

- EOCs may be managed using the five primary ICS functions of Command, Operations, Planning, Logistics, and Finance/Administration.

- The IC would most likely interact with the EOC OSC. In some jurisdictions, local policy may provide for direct IC-to-EOC management interaction. This may occur when there is a large single incident that has major impact on the community.

- It may be useful in some situations (if approved by the IC) to have direct coordination between incident sections and their counterpart EOC section (i.e., Planning Section to Planning Section).

- Under UC, the EOC interactions are similar to those described above, but using their department's contact in the Operations Section.

PHASE IV: DEMOBILIZATION

Demobilization planning must start early. Each section of the ICS must participate by providing information needed to ensure a smooth demobilization process. Important information elements include

- resource information (location, operation, designation, type, and kind);
- agency agreements (use conditions or time used requirements);
- physical condition of personnel (determines whether personnel need rehabilitation before rerelease);
- transportation (requirements for transportation from incident);
- costs (cost accounting for time and use of resources); and
- priority (or critical) needs (priority of need for resource to return to home agency or another incident).

Development of the demobilization plan must begin early in the incident. The plan should include

- Information on the demobilization procedure;
- Responsibilities for incident personnel:
  - Planning Section provides information on resources,
  - Liaison Officer knows terms of agreements on release,
  - Safety Officer considers physical condition of personnel and transportation,
  - Logistics Section handles transportation, communications, and maintenance,
  - Operations Section knows continuing needs for tactical resources, and
  - Finance Section processes claims, time records, and costs.
- Release procedures (may include rehabilitation for personnel, maintenance, and resupply). Agency dispatch centers give priorities for the timely release of resources. Release priorities should include priority factors as follows:
  - Type of resource,
  - Critical need elsewhere,
  - Cost, and
  - Travel distance.
- Personnel should be debriefed or defused as necessary in accordance with the incident CISM plan; and
- All forms and records should be collected.

PHASE V: RETURN TO A STATE OF READINESS

Emergency response organizations must be able to return to a state of readiness as soon as possible to provide protection to the community they serve.

- Rehabilitating personnel should be the first step. Provisions should be in place for a CISM program (so members may receive debriefings, defusing, or follow-up care).

- Repair or replace equipment.

- Forward records, reports, and other information for processing.

- Complete an after-action analysis as necessary depending on size, complexity, or other circumstances such as agency requirements. The purpose of this analysis is to evaluate the response and to capture lessons learned for application to future operations.

- Adjust operating procedures to incorporate lessons learned.

Activity 6.1

Implementing Initial Incident Command System Organization

Purpose

To demonstrate the ability to design and implement an initial IAP and associated ICS organization.

Directions

1. You will perform this activity in the same workgroup used for the last activity.

2. Your group will use the same breakout area.

3. While accomplishing this activity, your group should respond from the perspective of being the **first-arriving officer on scene**.

4. Turn to the incident map provided. Your instructor will present you with details on this new scenario.

5. Once you have heard the scenario details and relocated in your breakout area, your group will:

   a. Elect a group spokesperson and recorder.

   b. Perform an incident sizeup.

   c. Develop an initial IAP using the ICS Form 201 provided. (Note: When building your organization chart, show only what is **on scene**.)

6. At the conclusion of the allotted time, the instructor will reconvene the class.

7. Your spokesperson will have 5 minutes to present **one** element of your assignment. (Your instructor will inform the group spokesperson of which presentation element immediately prior to the presentation.)

8. Your instructor will comment on each presentation, summarize group findings, and respond to questions.

9. Keep your completed ICS Form 201, as it will be needed in future activities.

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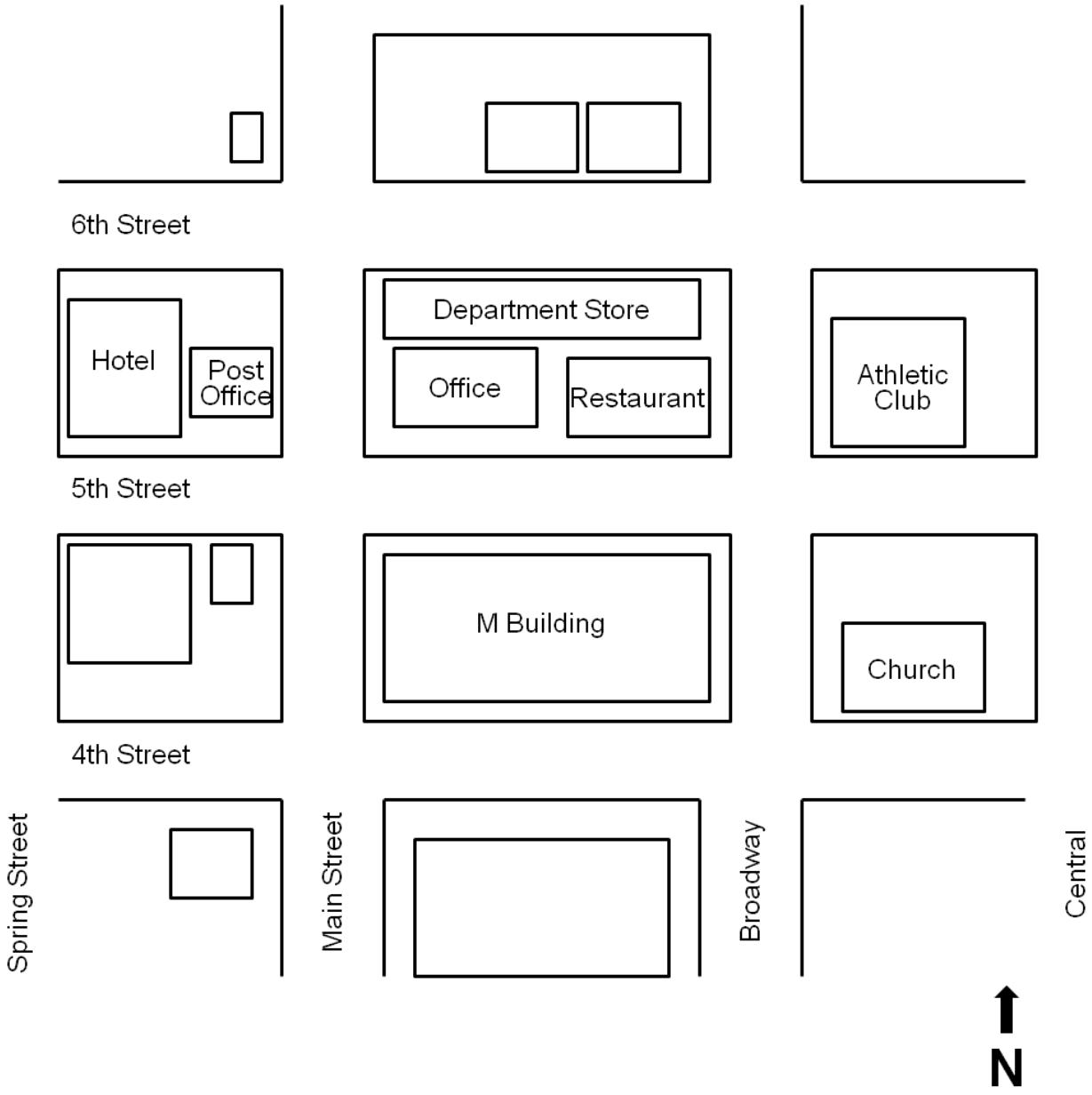
Activity 6.1 (cont'd)

Incident Area Map



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Activity 6.1 (cont'd)

Instructions for completing the Incident Briefing (ICS Form 201)

Item Number 1	Incident Name	Enter name of incident.
Item Number 2	Date Prepared	Enter date (month/day/year).
Item Number 3	Time Prepared	Enter time prepared (24-hour clock).
Item Number 4	Map Sketch	Show: perimeter, control lines, structures resource assignments, incident facilities, and other special information on a sketched map (or attached to a map).
Item Number 5	Prepared by	Enter the name and position of the person completing the form.
Item Number 6	Summary of Current Objectives and Actions	Enter the strategy and tactics used on the incident and note any specific problem areas.
Item Number 7	Current Organization	Enter on the organization chart the names of the organization individuals assigned to each position. Modify chart as necessary.
Item Number 8	Resource Summary	Enter the following information about the summary resources ordered: - Resources ordered (enter the number and type of resources ordered) - Resource identification (enter the agency identifier: S/T, TF, kind and type) - ETA/On-scene (enter the estimated time of arrival. Place the arrival time or a checkmark in the "on-scene" column upon arrival) - Location/Assignment (enter the assigned location of the resource and/or the actual assignment)

NOTE: additional pages may be added to this form if needed.

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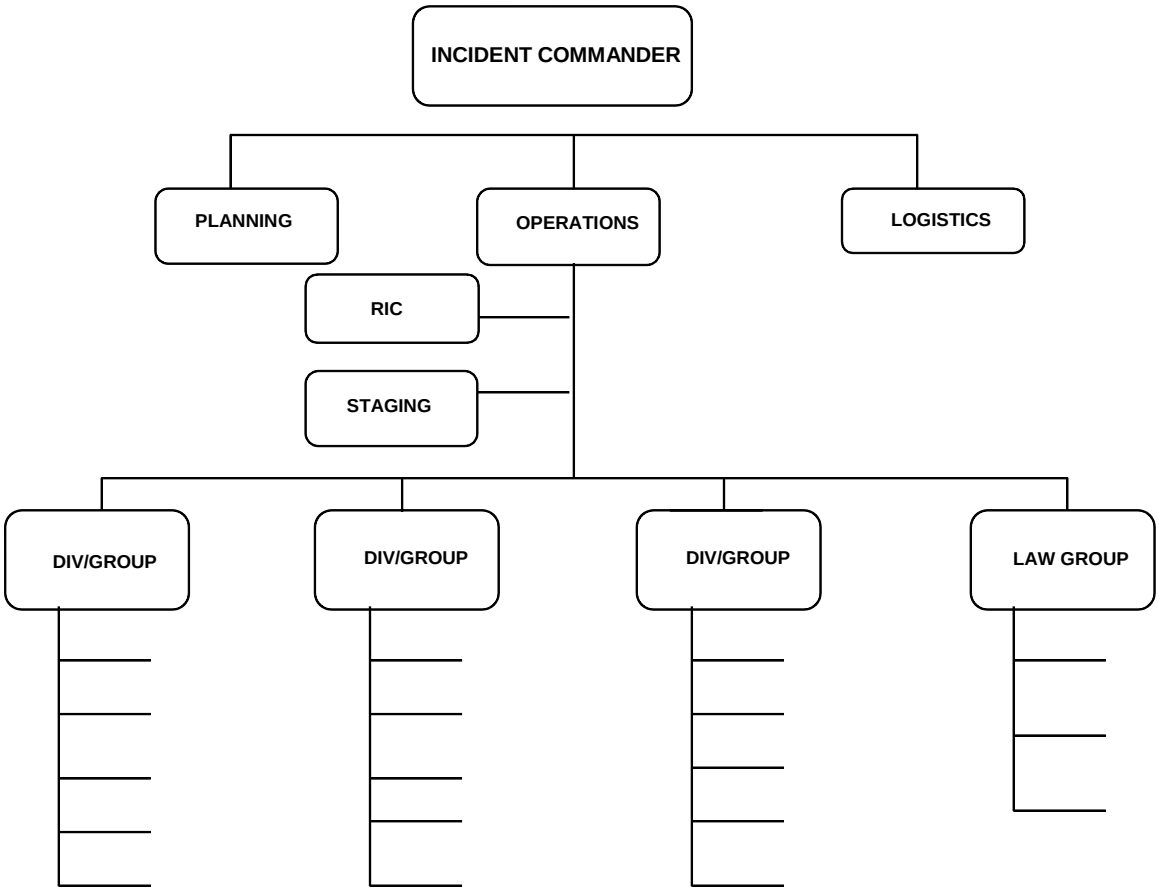
Activity 6.1

ICS Form 201

INCIDENT BRIEFING	1. Incident Name	2. Date Prepared	3. Time Prepared
4. Map Sketch			
ICS 201	PAGE 1	5. PREPARED BY (NAME AND POSITION)	

6. SUMMARY OF CURRENT OBJECTIVES AND ACTIONS		
CURRENT OBJECTIVES:		
CURRENT ACTIONS:		
ICS 201	**PAGE 2**	

7. CURRENT ORGANIZATION



ICS 201	PAGE 3	

8. RESOURCES SUMMARY				
RESOURCES ORDERED	**RESOURCE IDENTIFICATION**	**ETA**	**ON-SCENE**	**LOCATION/ASSIGNMENT**
ICS 201	**PAGE 4**			

Activity 6.2

Implementing an Expanded Incident Command System Organization

Purpose

To demonstrate an ability to **expand** an Incident Command organization.

Directions

1. You will reassemble in the same groups that you were in for Activity 6.1.

2. Your group will use the same breakout area as last time.

3. This activity will **build on** the scenario presented to you in Activity 6.1.

4. The **difference in approach** between this activity and the last is that in this activity, while accomplishing activity tasks, your group is to respond from the perspective of the **IC**.

5. Turn to the incident map that your group used in Activity 6.1.

6. Your instructor will present the class with **additional** details on the scenario.

7. Once relocated in your breakout area, your group will do the following:

   a. Elect a group spokesperson and recorder.

   b. Return to the organization chart and objectives created in Activity 6.1 (ICS Form 201).

   c. Based on the **additional** incident details provided, perform the following tasks. Record your findings on an easel pad.

8. When your time is up, the instructor will reconvene the class.

9. The instructor will then ask each group spokesperson to name one (or more) organization chart element(s) (and associated objective(s)).

10. Your instructor will summarize group findings and respond to questions.

11. Keep the organization charts and list of objectives created during this activity, as they will be used later in this course.

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Activity 6.3

Organizing Extended Operations

Purpose

To understand and to be able to develop a fully expanded ICS organization.

Directions

1. The instructor will show additional slides and present additional scenario details that build from Activity 6.2.

2. You should remain in your same groups.

Discussion

The instructor will facilitate a class discussion on the following:

1. Operational objectives for the extended operation.

2. An expanded ICS organization chart.

3. Resource requirements necessary to meet operational objectives.

4. Incident facilities needed for the incident.

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NOTE-TAKING GUIDE

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NOTE-TAKING GUIDE

Slide 6-1

Unit 6:
Structural Collapse:
Operational Phases

Slide 6-1

Slide 6-2

Terminal Objective

The students will be able to describe all operational phases associated with a structural collapse incident.

Slide 6-2

Slide 6-3

Enabling Objectives

The students will:

- **Define five operational phases.**
- **Describe the conditions that trigger transition of operational phases.**
- **Demonstrate an ability to develop an appropriate Incident Command System (ICS) organization to command and control a structural collapse incident.**

Slide 6-3

Slide 6-4

Enabling Objectives (cont'd)

- **Identify, request, and apply specialized Urban Search and Rescue (US&R) resources.**
- **Explain the application of critical scene management issues and factors in the appropriate operational phase.**

Slide 6-4

Slide 6-5

Operational Phases

Major structural collapse incidents move through five operational phases:

- **Phase I: Initial response**
- **Phase II: Expanded response (reinforced)**
- **Phase III: Extended response (24-hour operation)**
- **Phase IV: Demobilization**
- **Phase V: Return to a state of readiness**

Slide 6-5

Slide 6-6

Phase I: Initial Response

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Slide 6-7

Establishing Command

Process includes
- **Announcing Command**
- **Assuming all Command and General Staff responsibilities**
- **Providing a brief radio report (location, type of structure, and situation)**
- **Establishing an Incident Command Post (ICP)**

Slide 6-7

Slide 6-8

Conducting a Sizeup

Assessment of:
- **Survey site**
- **Type of problem**
- **Hazards**
- **Conditions**
- **Victims**
- **Exposures**
- **Potential for escalation**

Slide 6-8

Slide 6-9

Developing an Incident Action Plan

Steps include
- **Understanding the situation**
- **Establishing objectives and strategy**
- **Developing tactical directions and assignments**
- **Preparing the plan (ICS Form 201)**
- **Implementing the plan**
- **Evaluating the plan**

Slide 6-9

Slide 6-10

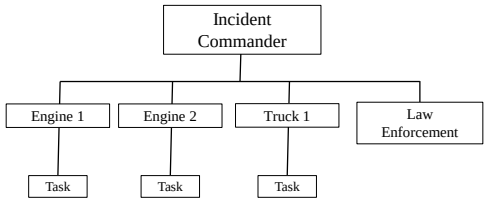
Requesting Resources

Request for sufficient resources required to implement the Incident Action Plan (IAP).

Slide 6-10

Slide 6-11

Resource Deployment and Organization



Slide 6-11

Slide 6-12

Resource Deployment and Organization (cont'd)

- **Deploy resources to accomplish priority objectives**
- **Initiate scene management:**
  - **– Isolate the area**
  - **– Establish zones**

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Slide 6-13

Involves Evaluating Response

- **Requires accurate information and good communications (status/progress reports)**
- **Involves determining resource effectiveness in achieving objectives**

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Activity 6.1 Implementing the Initial Incident Command System Organization

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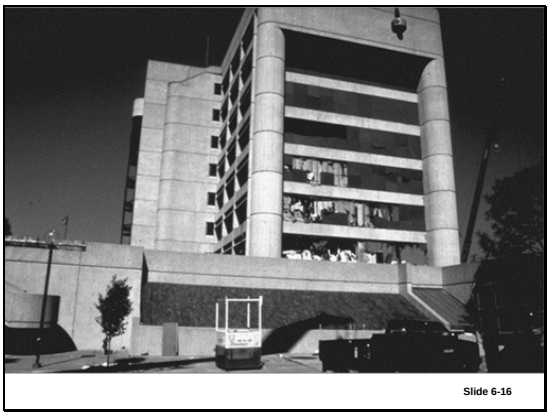
Slide 6-15

Video: "Initial Response"

Slide 6-15

Slide 6-16



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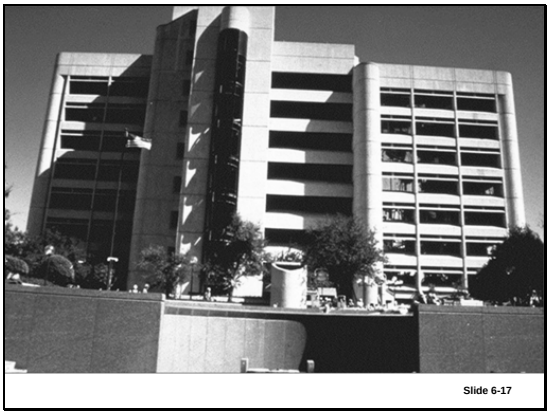

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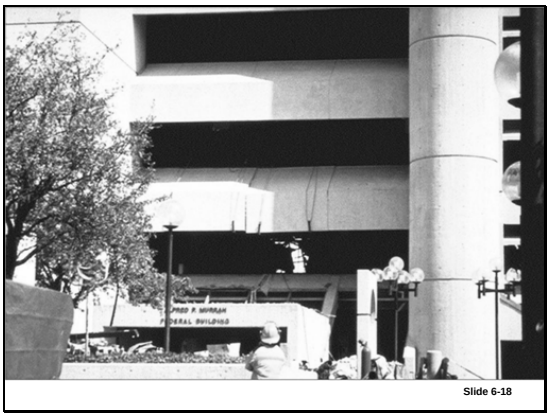

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Slide 6-26

Phase II: Expanded Response (Reinforced)

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Slide 6-27

An expanded reinforced response is initiated when the Incident Commander (IC) determines that the initial resources are insufficient.

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Slide 6-28

Sizeup

This must

- **Be continuous**
- **Anticipate the need for an extended operation**
- **Document information**

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Transfer of Command

- **Communication with the officer being relieved**
- **A briefing (using ICS Form 201) that contains:**
  - **Incident conditions**
  - **IAP**
  - **Progress toward completing objectives**
  - **Safety considerations**
  - **Resource assignments**
  - **Need for additional resources**
  - **Critical issues**

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Slide 6-30

Transfer of Command (cont'd)

- **Reassignment of the officer being relieved**
- **Communication of the change of Command**

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Slide 6-31

Evaluation of Current Situation

Identify:

- **What happened**
- **Progress made**
- **Quality of current plan**
- **Incident growth potential**
- **Present (and future) resource and organizational capability**

Slide 6-31

Slide 6-32

Developing a Risk Management Plan

- **Hazards must be assessed.**
- **Hazards must be controlled (or avoided).**
- **Risk must be managed.**

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Scene Control

- **Zone establishment**
- **Bystander evacuation**
- **Perimeter control**
- **Establishment of site security**
- **Establishment of incident facilities**
  - **Suitable ICP**
  - **Staging Area(s)**
  - **Triage and treatment areas**

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Developing/Expanding an Incident Action Plan

The plan needs to provide

- **Clear statement of objectives and strategies**
- **Basis for measuring work effectiveness**
- **Basis for measuring progress and providing for accountability**

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Developing/Expanding an Incident Action Plan (cont'd)

Essential IAP elements include

- **Statement of specific, measurable, action-oriented, reasonable, and timely (SMART) objectives**
- **Incident organization**
- **Tactics and resource requirements**
- **Support plans**

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Developing/Expanding an Incident Action Plan (cont'd)

IAP objectives should be:

- **Specific**
- **Measurable**
- **Action-oriented**
- **Reasonable**
- **Timely**

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Developing/Expanding an Incident Action Plan (cont'd)

Written IAPs should be used when:

- **Two or more jurisdictions are involved.**
- **Operational periods are required.**
- **Many organizational elements exist.**
- **IAP is required by agencies involved.**
- **The incident expands beyond the initial response phase.**

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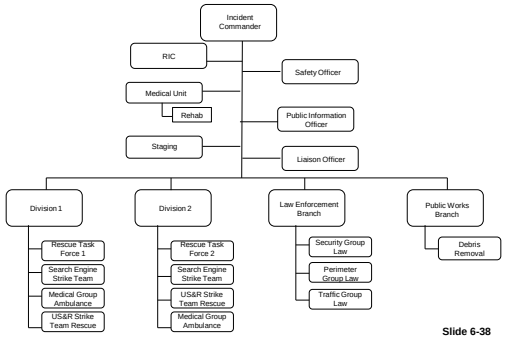
Expanded Response



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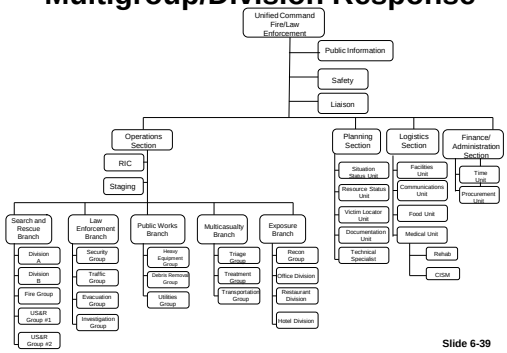
Multigroup/Division Response



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Activity 6.2
Implementing an Expanded Incident Command System Organization

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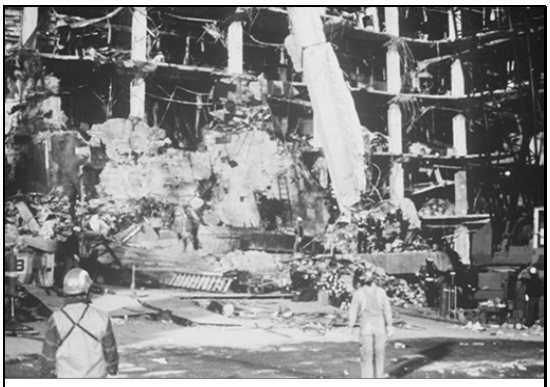

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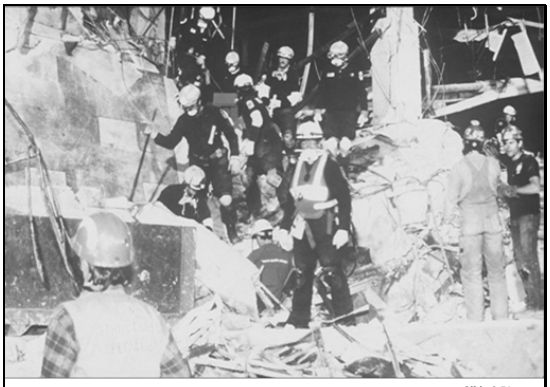

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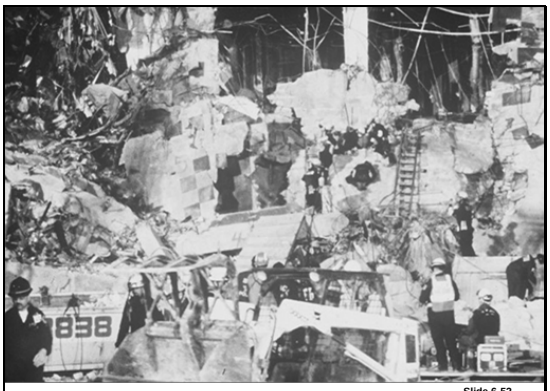

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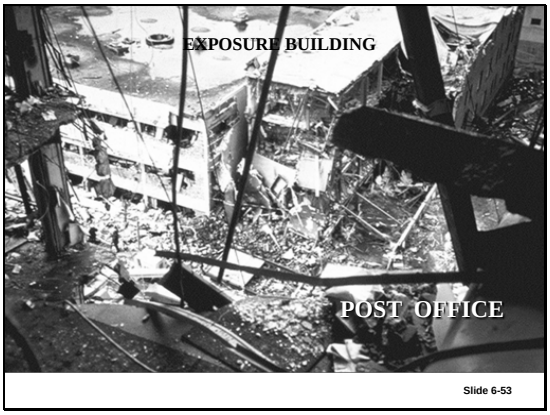

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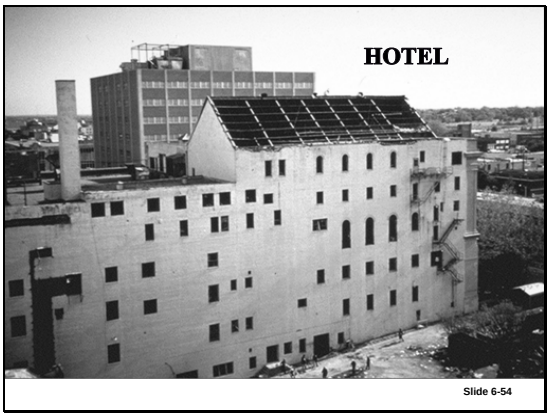

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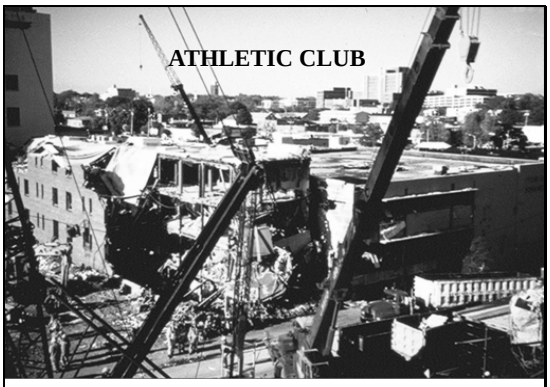

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Phase III: Extended Response (24-Hour Operation)

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Detailed Incident Action Plan

- **A detailed IAP is necessary for incidents with:**
  - **Extended response**
  - **Operational periods**
  - **Multiagency involvement**
  - **Multijurisdiction involvement**
- **Developed by the Planning Section for each operational period**

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Detailed Incident Action Plan (cont'd)

- **Essential elements include**
  - **Specific detailed objectives**
  - **Strategies to accomplish those objectives**
  - **Resource assignments**
  - **Incident organization**
  - **Maps**
  - **Plans for communications, medical, safety, and traffic**

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Detailed Incident Action Plan (cont'd)

- **Serves as a guide to evaluate operational effectiveness (based on objectives set for the operational period)**
- **Changes (as work progresses, priorities change)**
- **Is flexible (contingency plans are a necessity)**

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Operational Periods

- **Planned time periods (needed to achieve objectives)**
- **Require shorter operational periods (due to rapidly changing incidents)**

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Logistical Support

Logistics support needs to change to meet long-term needs, such as:

- **Lighting**
- **Large food/water supply**
- **Major equipment repair and supply function**
- **Special equipment acquisitions**
- **Other support functions (specific to a structural collapse incident)**

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Incident Facilities

Those used may include

- **Multiple Staging Areas**
- **Large base for personnel and equipment**
- **Supply and equipment distribution system**
- **Expanded ICP**
- **Larger triage and treatment areas**
- **Morgue**
- **Decontamination area**
- **Evidence recovery and holding areas**
- **Multiple Medical Units/Rehab**

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Extended Incident Command System Organization

A structural collapse incident of major magnitude may require an incident organization that involves resources from many agencies that work in a Unified Command (UC).

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Extended Incident Command System--Unified Command

During a multibranch response:

- **The IC assigns Logistics and Finance/ Administration Chiefs.**
- **Operations has established five branches.**
- **Planning, Logistics, and Finance/ Administration have several operational units.**

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Slide 6-66

Interface with Emergency Operations Center

- **Emergency Operations Center (EOC) is activated to support response agencies and coordinate multiagency operations.**
- **Local government EOCs are the central point for coordination inside and outside the jurisdiction.**
- **Field-level coordination may go through dispatch.**

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Interface with Emergency Operations Center (cont'd)

- **This may be managed using the five primary ICS functions.**
- **The IC normally interfaces with the EOC Operations Section.**
- **Section Chiefs may interface directly with EOC Section Chiefs if approved by IC.**

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Activity 6.3
Organizing Extended Operations

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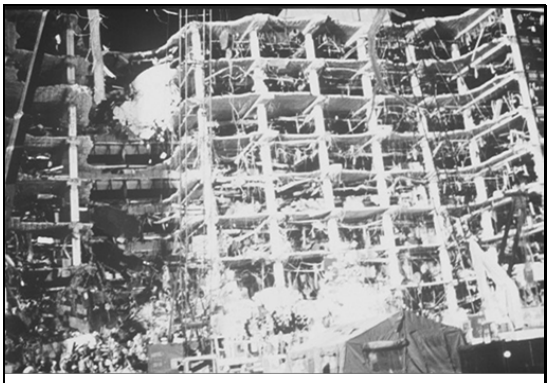

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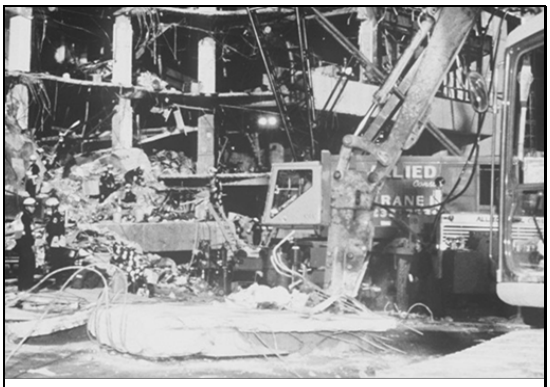

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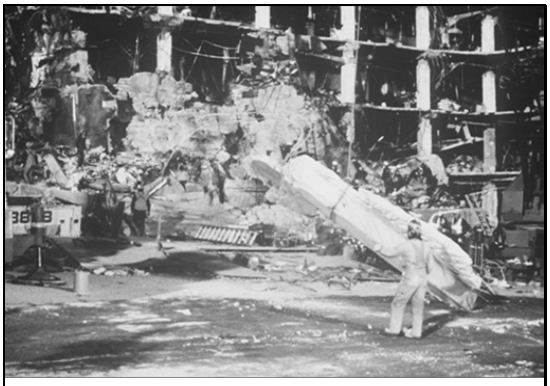

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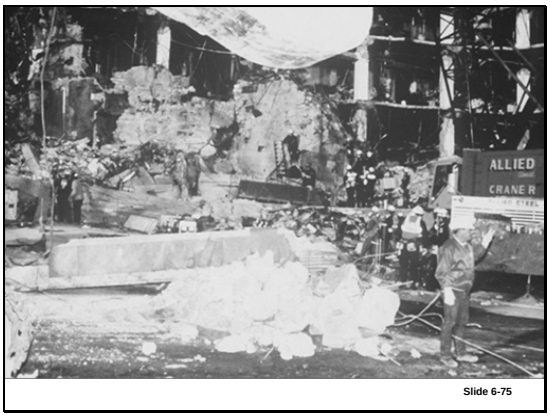

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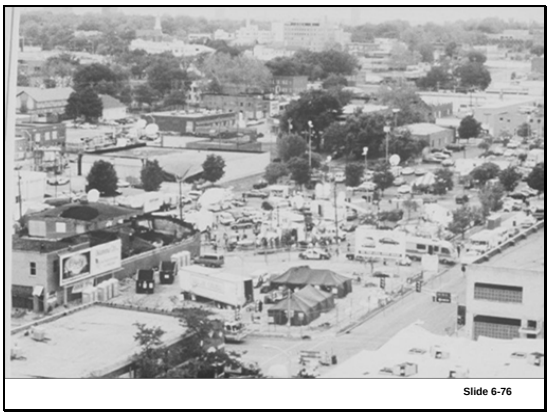

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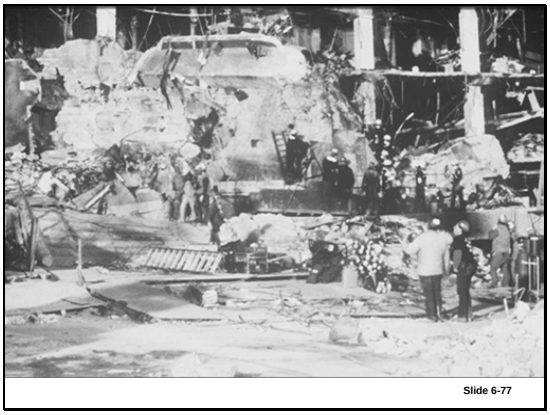

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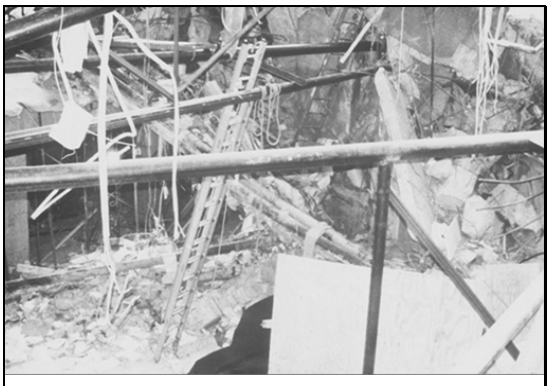

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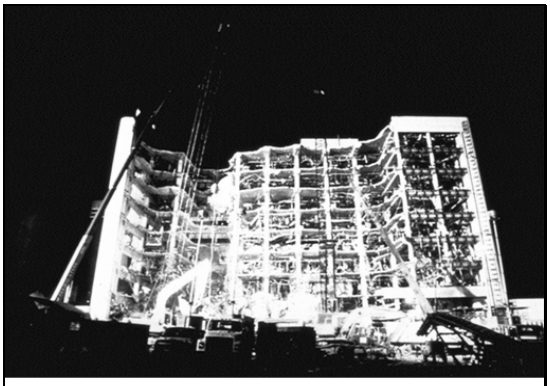

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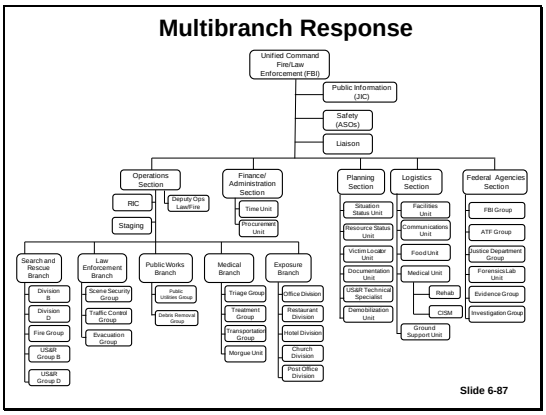

Slide 6-88

Summary

Five operational phases of an incident

- **Initial response**
- **Expanded response (reinforced)**
- **Extended response (24-hour operations)**
- **Demobilization**
- **Return to readiness**

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Summary (cont'd)

- **Incident action planning is continuous and provides direction for all incident personnel.**
- **The ICS expands (or contracts) based on resource and management needs of the incident.**
- **Sizeup, safety, risk, management, scene control, response evaluation, and coordination are key functions of the IC.**

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APPENDIX A
MASTER LISTING
ALL APPENDICES *INCIDENT COMMAND SYSTEM FOR STRUCTURAL COLLAPSE INCIDENTS*

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FILENAME	DESCRIPTION
• Appendices Master Listing IG.docx	This document
• Equip List For Four Ops Capabilities.docx	Equipment list related to NFPA 1670
• Glossary.docx	List of commonly named terms in ICSSCI
• OK City Murrah Building After Action Report.pdf	Official Oklahoma City FD after action report
• Pentagon After Action Report.pdf	Arlington County FD after action report
• Structural Collapse Operational Chklst.docx	One page form for initial operations by first arriving officer
• Structural Collapse Scene Assessment Chklst.docx	Multi-page document for structural collapse operations
• Structure-Hazards Marking System.docx	FEMA US&R marking system
• Temporary Shoring at Pentagon.pdf	Structural engineer report of shoring operations at Pentagon
• FDNY 911 reports	Directory of Official FDNY after action reports
• FEMA ICS Forms	Directory of Blank ICS forms
• 2005-09-05 hurricane katrina iap.pdf	Incident Action Plan – Hurricane Katrina
• 2005-09-08 hurricane katrina iap.pdf	Incident Action Plan – Hurricane Katrina

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APPENDIX B
EQUIPMENT LIST FOR
FOUR OPERATIONAL CAPABILITIES

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Minimum Equipment Lists

The following lists identify the minimum amount of tools and equipment needed to provide a safe and acceptable level of service for each of the four levels of Urban Search and Rescue (US&R) operational capability. The amount, size, and type of equipment listed can be increased to provide a higher degree of safety and service in each level of US&R operational capability.

US&R Basic Level

(Minimum Equipment)

Quantity	Item
2	8–10 lb. sledge hammer
2	3–4 lb. sledge hammer
2	Cold chisel (1x7-7/8")
4	Pinch point pry bar (60")
2	Claw wrecking bar (3')
2	Hacksaw (heavy duty)
3	Carbide hacksaw blade package
2	Crosscut handsaw (26")
1	Cribbing and wedge kit (see Tool Info Sheet)
1	First aid kit (see Tool Info Sheet)
1	Trauma kit (see Tool Info Sheet)
2	Blanket (disposable)
1	Backboard (with two straps)
1	Bolt cutter (30")
1	Scoop shovel "D" handle
1	Building marking kit (see Tool Info Sheet)
1	Axe (flat head)
1	Axe (pick head)

US&R Light Level

(Minimum Equipment List)

Quantity	Item
1	US&R basic equipment inventory
2	150'x1/2" Kernmantle, static, NFPA-approved.
2	Friction device (see Tool Info Sheet)
12	Carabiner (locking "D," 11 mm)
6	Camming devices (see Tool Info Sheet)
3	Pulley, rescue (2" or 4")
1	Litter and complete pre-rig (see Tool Info Sheet)
1	Webbing kit (see Tool Info Sheet)
2	Edge protection (see Tool Info Sheet)
2	Pick-off straps (see Tool Info Sheet)
2	Commercial harness (Class II or better)
6	Steel pickets (1"x4')
2	3–4 lb. short sledge hammer
1	Chain saw (see Tool Info Sheet)
3	Tape measure (25')
1	Shovel--long handle square point
1	Shovel--long handle round point
2	Framing hammer (24 oz)
2	Tri or speed square
2	Carpenter belts
1	Nails (see Tool Info Sheet)
2	Hydraulic jacks (minimum--5 ton)
2	Rolls of duct tape

US&R Medium Level

(Minimum Equipment List)

Quantity	Item
1	US&R basic equipment inventory and light equipment inventory
1	Airbag set (3 bags, 50 ton with three spare air bottles)
1	Bolt cutters (heavy duty, 42")
1	Generator (5 kw)
4	Floodlight (50 wt)
6	Extension cords (50')
1	Junction box (4 outlet with GFI)
1	Wye electrical adapter
1	Circular saw (12") with 2-1/2 GL fuel
2	Circular saw blades (12" carbide tip)
12	Circular saw blades (12" metal cutting)
2	Circular saw blade (12" diamond, continuous rim)
1	Pressurized water spray can
1	Rotary hammer (1-1/2")
1	Rotary hammer bit kit (see Tool Info Sheet)
1	Anchor kit (see Tool Info Sheet)
1	Saw, electric (10-1/4")
2	Skill saw blade (10-1/4" carbide tip)
12	Skill saw blade (10-1/4" metal cutting)
1	Sawsall
12	Sawsall blades (wood)
18	Sawsall blades (metal)
2	Rope (300'x1/2") (static Kernmantle NFPA approved)
2	Rope (20'x1/2") (static Kernmantle NFPA approved)
3	Pulley, rescue (2" or 4")
2	Friction device (see Tool Info Sheet)
12	Carabiner (locking "D," 11 mm)
1	Webbing kit (see Tool Info Sheet)
1	Etrier Set
2	Commercial harness (Class II or better)
2	Shovel, folding, short
4	Haul buckets (metal or canvas)
8	Ellis clamps
1	Ellis jack
8	4x4x8' lumber
6	Screw jacks, pairs (1-1/2")
1	Pipe cutter, multiwheel (1-1/2")
6	Pipe (6'x1-1/2", schedule 40)

Quantity	Item
2	Hi-lift jack with extension tube
1	Cribbing and wedge kit (see Tool Info Sheet)
1	Come along (2/4 ton)
1	Chain set (see Tool Info Sheet)
1	Tool kit (see Tool Info Sheet)
1	Demolition hammer, small (see Tool Info Sheet)
1	Demolition hammer, large (see Tool Info Sheet)
1	Electrical detection device (see Tool Info Sheet)
1	Ventilation fan (see Tool Info Sheet)
1	3 range air monitor

US&R Heavy Level

(Minimum Equipment List)

Quantity	Item
1	US&R basic equipment inventory
1	US&R light equipment inventory
1	US&R medium equipment inventory
6	SCBA (with PAL and 1 spare bottle each)
3	Supplied air breathing apparatus (SABA)
	Umbilical system with escape bottles and 250' hose each
1	3 range air monitor
1	Tripod (human rated, 7–9' with hauling system)
2	Full body harness (Class III or better)
1	Ventilation fan (see Tool Info Sheet)
1	Circular saw (16") with 2-1/2 CL fuel
2	Circular saw blade (16" diamond, continuous rim)
2	Circular saw blade (16" carbide tip)
1	Pressurized water spray can
6	Canister type respirators
24	Replacement canisters for respirators
1	Generator (5 KW)
4	Floodlight (500 WT)
6	Extension cords (50')
1	Junction box (4 outlet with GFI)
1	Wye electrical adapter
1	Rotary hammer (1-1/2")
1	Rotary hammer bit kit (see Tool Info Sheet)
1	Sawsall
12	Sawsall blades (wood)
18	Sawsall blades (metal)
1	Drill (1/2", variable speed)
1	Drill bit set (steel, 1/8–5/8")
1	Drill bit set (carbide tip, 1/4–5/8")
1	Chain saw, 12" electric with spare carbide tip chain
	If not already present from light inventory.
1	Rebar cutter (1" capacity)
1	Cutting torch (see Tool Info Sheet)
1	Come along (2/4 ton)
1	Demolition hammer, small (see Tool Info Sheet)
1	Demolition hammer, large (see Tool Info Sheet)
1	Extrication stretcher for confined areas
2	Shovel, folding, short

Quantity	Item
1	Mechanical axe (high voltage)
1	Mechanical grabber (high voltage)
2	Pair lineman gloves (high voltage)
1	Upgrade high pressure air bags to a total of 245 tons
1	Airbag regulator, control valve with two additional hoses
2	Building marking kits (see Tool Info Sheet)
1	Cribbing and wedge kit (see Tool Info Sheet)
1	Ram set powder actuated nail gun (with 150 red charges)
1	Box ram set nails with washers (2-1/2")
1	Box ram set nails with washers (3-1/2")
1	Green stone wheel (to sharpen carbide tips on tools)
1	Nails (see Tool Info Sheet)
2	Tri or speed squares
2	Framing hammers (24 oz)
2	Carpenter belts
1	Level (6")
1	Level (4')
1	Nail gun, pneumatic (framing type, 6p–16p)
1	Case nail gun nails (8p)
1	Case nail gun nails (16p)
32	Ellis clamps
1	Ellis jack
8	Post screw jacks
12	Screw jacks, pairs (1-1/2")
12	Pipe (6'x1-1/2", schedule 40)
12	Steel pickets (1"x4')
1	Case orange spray paint (line marking, downward application type)
1	Case--duct tape
1	Technical search device (see Tool Info Sheet)
1	Hydraulic rescue tool (see Tool Info Sheet)

US&R Tool Information Sheet

Anchor Kit	1 box 3/8"x5" Hilti Kwick Bolt concrete anchors. 25 each: 3/8" SMC stainless steel anchor plates. 25 each: 3/8" drop forged H/D eye nuts. Anchors and plates are for rope system anchor points.
Building Marking Kit	2 each: Orange spray paint (line marking, downward Application type). 4 each: Lumber chalk. 2 each: Lumber crayon (red). 2 each: Lumber crayon (yellow). 4 each: Lumber pencil.
Camming Device	Prusik lock (7 or 8 mm) or Gibb's Ascender (or combination of each.
Chain Saw	Gasoline or electric with carbide tip chain and one spare chain and bar oil. Gasoline: 2-1/2 gal. spare fuel and oil mixture. Electric: need electric power source and 100' of extension cord.
Chain Set	1 each: 1' with a grab hook on each end. 1 each: 5' with a grab hook and slip hook. 1 each: 10' with a grab hook and slip hook. 1 each: 20' with a grab hook and slip hook. All chain is 3/8", grade 7 or better.
Cribbing and Wedge Kit	24 each: 4x4x18". 24 each: 2x4x18". 12 pair: 4x4x18" wedges. 12 pair: 2x4x12" wedges. Containers (to store and carry).
Cutting Torch	One or more plasma cutters, exothermic torch with 50 rods, heavy duty oxy/acetylene torch with spare O_2 cylinder (or other similar device).
Demolition Hammer, Large	Electric, pneumatic, or gasoline. 60 lb. (minimum). 2 each: Bull point bits. 2 each: Chisel point bits.

Demolition Hammer, Small	Electric, pneumatic, or gasoline. 30–45 lb. (minimum). 2 each: Bull point bits. 2 each: Chisel point bits.
Edge Protection	Commercial edge rollers, canvas tarps, split fire hose, or any combination of each.
Electrical Detection Device	Hot stick electrical alert device, volt/ohm meter, or other device to alert crew members of electrical current.
First Aid Kit	Basic first aid supplies for minor injuries to six victims or crew members. Example of contents: Band-Aids, eye wash, 4x4" gauze pads, gauze dressing, triangular and elastic bandages, etc.
Friction Device	Figure eight with ears or Brake Bar Rack or one of each.
Hydraulic Rescue Tool	Gasoline, electric, or manual device with 10,000 lb. minimum force. Able to cut, spread, and pull. Gasoline: 2-1/2 gallons spare fuel and oil.
Litter and Complete Pre-rig	Litter capable and rated for horizontal and vertical lift and hoist. Pre-rig can be commercial or preassembled to include adjustment and attachment capability.
Nails	25 lb.: 16p vinyl coated (green sinkers). 25 lb.: 8p vinyl coated (green sinkers). 25 lb.: 16p duplex. Note: High humidity areas may require cadmium coated nails to prevent rust during long term storage.
Pick Off Strap	Webbing strap with one "D" ring at one end and one "V" ring adjuster on webbing strap. (Webbing: 1-3/4" wide with 10,000 lb. rating, minimum 42" long) (Hardware strength 5,000 lb. rating).
Rotary Hammer Bit Kit	1 each: Carbide tip bits, 3/8", 1/2", 3/4", 1", 1-1/2", 2". 2 each: Bull point bits. Appropriate adapters for bits and depth range capability.
Technical Search Device	One or more of the following: optical instruments (search cameras), seismic/acoustic instruments (listening devices).

Tool Kit

1 each: 12"-crescent wrench.
1 each: 8"-crescent wrench.
1 each: Slip joint pliers.
1 each: Channel lock pliers.
1 each: Wire side cutters.
1 each: 1/2"-socket set with ratchet and 6" extension.
1 each: 1/2"-breaker bar.
1 each: Ball peen hammer.
1 set: Standard head screwdrivers.
1 set: Phillips head screwdrivers.
Any other tools required for maintenance and repair of equipment in cache.

Trauma Kit

Basic supplies to treat trauma injuries to six victims or crew members. Advanced life support (ALS) type equipment (i.e., IV solutions, drugs, etc.) is not listed but may be carried if authorized. Examples of items to carry include: large trauma dressings, splints, airways, bag valve respirator with large and small masks, etc.).

Ventilation Fan

Electric or gasoline powered with extension tube to direct air flow.

Webbing Kit

6 each: 1"x5'.
6 each: 1"x12'.
6 each: 1"x15'.
6 each: 1"x20'.
All webbing is spiral weave nylon, 4,000 lb. minimum tensile strength. Each webbing length must be a different color.

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APPENDIX C
GLOSSARY

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GLOSSARY

Agency Representative — Individual assigned to an incident from an assisting or cooperating agency who has been delegated full authority to make decisions on all matters affecting that agency's participation at the incident. Agency Representatives report to the Incident Liaison Officer.

Air-to-Air Net — A part of the Integrated Communications Radio Network. Air-to-Air Nets will normally be predesignated and assigned for use at a large incident.

Allocated Resources — Resources dispatched to an incident that have not yet checked in with the Incident Commander (IC).

Ambulance — A ground vehicle providing patient transport capability, specified equipment capability, and personnel (basic life support (BLS) ambulance or advance life support (ALS) ambulance, etc.).

Assigned Resources — Resources checked in and assigned work tasks on an incident.

Assisting Agency — An agency directly contributing suppression, rescue, support, or service resources to another agency.

Available Resource — Resources assigned to an incident and available for an assignment.

Base — That location at which the primary logistics functions are coordinated and administered. (Incident name or other designator will be added to the term "Base.") The Incident Command Post (ICP) may be collocated with the base. There is only one base per incident.

Basic Operational Level — The Basic level represents the minimum capability to conduct safe and effective search-and-rescue operations at structure collapse incidents. Personnel at this level shall be competent at surface rescue which involves minimal removal of debris and building contents to extricate easily accessible victims from noncollapsed structures.

Basic Rope Rescue — Rescue operations of a noncomplex nature employing the use of ropes and accessory equipment.

BOO — A term used by Federal Emergency Management Agency (FEMA) Urban Search and Rescue (US&R) Task Forces which indicates their "Base of Operation." This "Base of Operation" is the same as a "Base" location.

Branch — That organizational level having functional/geographic responsibility for major segments of incident operations. The Branch level is organizationally between Section and Division/Sector/Group.

Clear Text	The use of plain English in radio communications transmissions. No Ten Codes or agency specific codes are used when using Clear Text.
Command	The act of directing, ordering, and/or controlling resources by virtue of explicit legal, agency, or delegated authority.
Command Net	A part of the Integrated Communications Radio Network. This net should link together the Incident Command, key staff members, Section Chiefs, Division and Group Supervisors at a large incident.
Command Post (CP)	That location at which primary Command functions are executed; usually collocated with the Incident Base.
Command Staff	The Command Staff consists of the Information Officer, Safety Officer, and Liaison Officer, who report directly to the IC.
Communications Unit	Functional Unit within the Service Branch of the Logistics Section. This unit is responsible for the incident communications plan, the installation and repair of communications equipment, and operation of the Incident Communications Center. Also may refer to a vehicle (trailer or mobile van) used to provide the major part of an Incident Communications Center.
Company	A ground vehicle providing specific equipment capability and personnel (Engine Company, Truck Company, Rescue Company, etc.).
Company Officer (CO)	The individual responsible for Command of a Company. This designation is not specific to any particular fire department rank (may be a firefighter, lieutenant, captain, or chief officer, if responsible for Command of a single Company).
Compensation/ Claims Unit	Functional Unit within the Finance/Administration Section. Responsible for financial concerns resulting from injuries or fatalities at an incident.
Confined Space Rescue	Rescue operations in an enclosed area, with limited access/egress, not designed for human occupancy and have the potential for physical, chemical, or atmospheric injury.
Cooperating Agency	An agency supplying assistance other than direct suppression, rescue, support, or service functions to the incident control effort (Red Cross, law enforcement agency, telephone company, etc.).

Cost Unit — Functional Unit within the Finance/Administration Section. Responsible for tracking costs, analyzing cost data, making cost estimates, and recommending cost-saving measures.

Crew — A specific number of personnel assembled for an assignment such as search, ventilation, or hoseline deployment and operations. The number of personnel in a crew should not exceed recommended span of control guides. A crew operates under the direction supervision of a crew leader.

Demobilization Unit — Functional Unit within the Planning Section. Responsible for assuring orderly, safe, efficient demobilization of resources committed to the incident.

Director — Incident Management System (IMS) title for individuals responsible for Command of a Branch.

Dispatch Center — A facility from which resources are directly assigned to an incident.

Division — That organization level having responsibility for operations within a defined geographic area. The Division level is organizational between Single Resources, Task Force, or the Strike Team and the Branch.

Documentation Unit — Functional Unit within the Planning Section. Responsible for recording/protecting all documents relevant to the incident.

Engine Company — A ground vehicle providing specified levels of pumping, water, hose capacity, and personnel.

Facilities Unit — Functional Unit within the Support Branch of the Logistics Section. Provides fixed facilities for the incident. These facilities may include the Incident Base, feeding areas, sleeping areas, sanitary facilities, and a formal CP.

Finance/ Administration Section — Responsible for all costs and financial actions of the incident. Includes the Time Unit, Procurement Unit, Compensation/Claims Unit, and the Cost Unit.

Food Unit — Functional Unit within the Service Branch of the Logistics Section. Responsible for providing meals for personnel involved with the incident.

General Staff — The group of incident management personnel comprised of the Operations Section Chief, Planning Section Chief, Logistics Section Chief, and Finance/Administration Section Chief.

Ground Support Unit — Functional Unit within the Support Branch of the Logistics Section. Responsible for fueling/maintaining/repairing vehicles and the transportation of personnel and supplies.

Ground-to-Air Net — A part of the Integrated Communications Radio Network. A ground-to-air tactical net may be designated, or regular tactical nets may be used to coordinate ground-to-air traffic at large incidents.

Group — That organizational level having responsibility for a specified functional assignment at an incident (ventilation, salvage, water supply, etc.).

Heavy-Floor Construction — Structures of this type are built using cast-in-place concrete construction consisting of flat slab panel, waffle or two-way concrete slab assemblies. Pretensioned or posttensioned reinforcing steel rebar or cable systems are common components for structural integrity. The vertical structural supports include integrated concrete columns, concrete enclosed or steel frame, which carry the load of all floor and roof assemblies. This type includes heavy-timber construction that may use steel rods for reinforcing. Examples of this type of construction include offices, schools, apartments, hospitals, parking structure, and multipurpose facilities. Common heights vary from single-story to highrise structures.

Heavy Operational Level — The heavy level represents the minimum capability to conduct safe and effective search-and-rescue operations at structure collapse incidents involving the collapse or failure of reinforced concrete or steel-frame construction and Confined Space Rescue operations.

Heavy-Wall Construction — Materials used for construction are generally heavy and use an interdependent structural or monolithic system. These types of materials and their assemblies tend to make the structural system inherently rigid. This construction type is usually built without a skeletal structural frame. It uses a heavy wall support and assembly system to provide support for the floors and roof assemblies. Occupancies using tilt-up concrete construction are typically one to three stories in height and consist of multiple monolithic concrete wall panel assemblies. They also use an interdependent girder, column and beam system for providing lateral wall support of floor and roof assemblies. Occupancies typically include commercial, mercantile and industrial. Other examples of this type of construction type include reinforced and unreinforced masonry (URM) buildings typically of lowrise construction, one to six stories in height, of any type of occupancy.

Incident Action Plan (IAP) — The strategic goals, tactical objectives, and support requirements for the incident. All incidents require an action plan. For simple incidents, the action plan is not usually in written form. Large or complex incidents will require that the action plan be documented in writing.

Incident Command System (ICS) — An IMS with a common organizational structure with responsibility for the management of assigned resources to effectively accomplish stated objectives pertaining to an incident.

Incident Commander (IC) — The individual responsible for the management of all incident operations.

Information Officer — Responsible for interface with the media or other appropriate agencies requiring information direct from the incident scene. Member of the Command Staff.

Initial Attack — Resources initially committed to an incident.

Integrated Communications — Communications at an incident are managed through the use of a common communications plan and an incident-based communications center established solely for the use of tactical and support resources assigned to the incident. All communications between organizational elements at an incident should be in plain English, "Clear Text." No codes should be used and all communications should be confined only to essential messages. The Communications Unit is responsible for all communications planning at the incident. This will include incident-established radio networks, onsite telephone, public address, and offincident telephone/ microwave/radio systems.

Ladder Company — See Truck Company.

Leader — The individual responsible for Command of a Task Force, Strike Team, or Functional Unit.

Liaison Officer — The point of contact for assisting or coordinating agencies. Member of the Command Staff.

Light-Frame Construction — Materials used for construction are generally lightweight and provide a high degree of structural flexibility to applied forces such as earthquakes, hurricanes, tornadoes, etc. These structures are typically constructed with a skeletal structural-frame system of wood or light gauge steel components, which provide support to the floor or roof assemblies. Examples of this construction type are wood-frame structures used for residential, multiple lowrise occupancies, and light commercial occupancies up to four stories in height. Light gauge steel-frame buildings include commercial business and light manufacturing occupancies and facilities.

Light Operational Level — The Light level represents the minimum capability to conduct safe and effective search-and-rescue operations at structure collapse incidents involving the collapse or failure of light-frame construction and basic rope rescue operations.

Logistics Section — Responsible for providing facilities, services, and materials for the incident. Includes the Communications Unit, Medical Unit, and Food Unit, within the Service Branch and the Supply Unit, Facilities Unit, and Ground Support Unit, within the Support Branch.

Medical Unit — Functional Unit within the Service Branch of the Logistics Section. Responsible for providing emergency medical treatment of emergency personnel. This unit does not provide treatment for civilians.

Medium Operational Level — The Medium level represents the minimum capability to conduct safe and effective search-and-rescue operations at structure collapse incidents involving the collapse or failure of reinforced and unreinforced masonry (URM), concrete tilt-up and heavy-timber construction.

Officer — The Command Staff positions of Safety, Liaison, and Information.

Operational Period — The period of time scheduled for execution of a given set of operation actions as specified in the IAP.

Operations Section — Responsible for all tactical operations at the incident. Includes up to 5 Branches, 25 Divisions/Groups/Sectors, and 125 Single Resources, Task Forces, or Strike Teams.

Out-of-Service Resources — Resources assigned to an incident but unable to respond for mechanical, rest, or personal reasons.

Planning Meeting — A meeting, held as needed throughout the duration of an incident, to select specific strategies and tactics for incident control operations and for service and support planning.

Planning Section — Responsible for the collection, evaluation, dissemination, and use of information about the development of the incident and the status of resources. Includes the Situation Status, Resource Status, Documentation, and Demobilization Units as well as Technical Specialists.

Precast Construction — Structures of this type are built using modular precast concrete components that include floors, walls, columns, and other subcomponents that are field connected upon placement on site. Individual concrete components use imbedded steel reinforcing rods and welded wire mesh for structural integrity and may have either steel beam, or column or concrete framing systems used for the overall structural assembly and building enclosure. These structures rely on single or multipoint connections for floor and wall enclosure assembly and are a safety and operational concern during collapse operations. Examples of this type of construction include commercial, mercantile, office, and multiuse or multifunction structures, including parking structures and large occupancy facilities.

Procurement Unit — Functional Unit within the Finance/Administration Section. Responsible for financial matters involving vendors.

Radio Networks — An element of Integrated Communications. Radio networks for large incidents normally include a Command Net, Tactical Nets, Support Net, Ground-to-Air Net, and Air-to-Air Net.

Reporting Locations — Any one of six facilities/locations where incident-assigned resources may check in. The locations are: ICP--Resources Unit (RESTAT), Base, Camp, Staging Area, Helibase, or Division Supervisor for direct line assignments. (Check in at one location only.)

Rescue Company — A ground vehicle providing specified rescue equipment, capability, and personnel.

Resource Status Unit (RESTAT) — Functional Unit within the Planning Section. Responsible for recording the status and accounting of resources committed to the incident, and evaluation of resources currently committed to the incident, the impact that additional responding resources will have on the incident, and anticipated resource needs.

Resources	All personnel and major items of equipment available, or potentially available, for assignment to incident tasks on which status is maintained.
Responder Rehabilitation (Rehab)	That function and location which shall include medical evaluation and treatment, food and fluid replenishment, and relief from extreme climatic conditions for emergency responders, according to the circumstances of the incident.
Safety Officer (SO)	Responsible for monitoring and assessing safety hazards, unsafe situations, and developing measures for ensuring personnel safety. Member of the Command Staff.
Search Marking System	A standardized marking system employed during and after the search of a structure for potential victims.
Section	That organization level having functional responsibility for primary segments of incident operations, such as Operations, Planning, Logistics, and Finance/Administration. The Section level is organizationally between Branch and IC.
Section Chief	ICS title for individuals responsible for Command of the functional Sections: Operations, Planning, Logistics, and Finance/ Administration.
Service Branch	A Branch within the Logistics Section. Responsible for service activities at an incident. Components include the Communications Unit, Medical Unit, and Food Unit.
Single Resource	An individual Company or Crew.
Situation Status Unit (SITSTAT)	Functional Unit within the Planning Section. Responsible for analysis of situation as it progresses. Reports to the Planning Section Chief.
Staging Area	That location where incident personnel and equipment are assigned on an immediately available status.
State/National Urban Search & Rescue (US&R) Task Force	A 62-person team specifically trained and equipped for large or complex US&R operations. The multidisciplinary organization provides five functional elements that include Command, search, rescue, medical, and technical. The US&R Task Force is designed to be used as a "single resource" and not disassembled to make use of individual task force elements.

Strategic Goals — The overall plan that will be used to control the incident. Strategic goals are broad in nature and are achieved by the completion of tactical objectives.

Strike Team — Five of the same kind and type of resources with common communications and a leader.

Structure/Hazards Marking System — A standardized marking system to identify structures in a specific area and any hazards found within or near the structure.

Supervisor — Individuals responsible for Command of a Division/Group.

Supply Unit — Functional Unit within the Support Branch of the Logistics Section. Responsible for ordering equipment/supplies required for incident operations.

Support Branch — A Branch within the Logistics Section. Responsible for providing the personnel, equipment, and supplies to support incident operations. Components include the Supply Unit, Facilities Unit, and Ground Support Unit.

Support Net — A part of the Integrated Communications Radio Network. A support net will be established primarily to handle status changing for resources as well as for support requests and certain other nontactical or Command functions.

Tactical Objectives — The specific operations that must be accomplished to achieve strategic goals. Tactical objectives must be both specific and measurable.

Tactical Level Management — A Division or Group.

Tactical Nets — A part of the Integrated Communications Radio Network. There may be several tactical nets. They may be established around agencies, departments, geographical areas, or even specific functions. The determination of how nets are set up should be a joint Planning/Operations function. The Communications Unit Leader will develop the plan.

Task Force — A group of any type and kind of resources, with common communications and a leader, temporarily assembled for a specific mission (not to exceed five resources).

Technical Specialists	Personnel with special skills who are activated only when needed. Technical Specialists may be needed in the areas of fire behavior, water resources, environmental concerns, resource use, and training. Technical Specialists report initially to the Planning Section but may be assigned anywhere within the IMS organizational structure as needed.
Time Unit	A Functional Unit within the Finance/Administration Section. Responsible for recordkeeping of time for personnel working at an incident.
Truck Company	A ground vehicle providing an aerial ladder or other aerial device, specified portable ladders and equipment capability and personnel.
Unit	That organization element having functional responsibility for a specific incident's Planning, Logistics, or Finance/Administration activity.
Urban Search and Rescue (US&R) Company	Any ground vehicle(s) providing a specified level of US&R operational capability, rescue equipment, and personnel.
Urban Search and Rescue (US&R) Crew	A predetermined number of individuals that are supervised, organized, and trained principally for a specified level of US&R operational capability. They respond with **no** equipment and are used to relieve or increase the number of US&R personnel at the incident.
Water Tender	Any ground vehicle capable of transporting specified quantities of water.

APPENDIX D
OKLAHOMA CITY MURRAH BUILDING AFTER ACTION REPORT

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The Oklahoma Department of Civil Emergency Management

After Action Report

Alfred P. Murrah Federal Building Bombing

19 April 1995 in Oklahoma City, Oklahoma

Information Contributors

Oklahoma Department of Civil Emergency Management
Federal Emergency Management Agency
Oklahoma City Fire Department
National Weather Service
Emergency Medical Services Authority
Oklahoma State Bureau of Investigation
Oklahoma Department of Education
Oklahoma Department of Health
Oklahoma Department of Human Services
Oklahoma State Insurance Fund
Board of Medicolegal Investigations - Office of the Chief Medical Examiner
Oklahoma Department of Mental Health and Substance Abuse Services
Oklahoma Military Department
Oklahoma Department of Public Safety
Oklahoma Department of Transportation
Oklahoma Water Resources Board
The Daily Oklahoman
The Dallas Morning News
Government Technology
Oklahoma Today
Public Safety Communications
American Red Cross
Salvation Army
Baptist General Convention of Oklahoma
Feed the Children
Oklahoma Seventh-Day Adventists

Photographs

FEMA Photo Documentation Team
FEMA Urban Search & Rescue Team
Associated Press World Wide Photos
KWTV Channel 9, Oklahoma City
Tinker AFB Photo Lab

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The Oklahoma Department of Civil Emergency Management

After Action Report

Alfred P. Murrah Federal Building Bombing

19 April 1995 in Oklahoma City, Oklahoma

Executive Summary

At 9:02 a.m., Wednesday, April 19, 1995, terrorism struck Oklahoma City, when a bomb exploded in front of the Alfred P. Murrah Federal Building. The bomb was located within the confines of a 24-foot Ryder rental truck. The explosive mixture had been prepared for charge with a detonation cord and pre-positioned, parked parallel, in a loading lane on the north side of the Murrah Building, near the intersection of N.W. 5th Street and Robinson Avenue. The force of the explosion was of such magnitude that it destroyed approximately one-third of the Murrah Building. The entire north face of the structure was reduced to rubble and each of the nine floors, plus the roof, received extensive damage. Contents of the first and second floors were blown against the southern portion of the building, while the third through ninth floors were initially raised by the blast and proceeded to pancake one atop the other at street level. When the dust cleared, approximately one-third of the structure was located in a pile of debris, measuring in some places 35-feet in height and running the length of the building. At the time of the blast, the Murrah Building housed some 600 federal and contract workers, as well as an estimated 250 visitors.

Federal agencies housed in the Murrah Building included the Bureau of Alcohol, Tobacco, and Firearms; the Drug Enforcement Administration; the Secret Service; the Department of Housing and Urban Development; the Social Security Administration; the U.S. Army and U.S. Marine Corps recruitment offices; the Veterans Administration; the General Accounting Office; the Department of Health and Human Services; the Department of Defense; the U.S. Customs Service; the Department of Agriculture; the Department of Transportation; and, the General Services Administration. An office of the Federal Employees Credit Union and the "America's Kids" Child Care Development Center were also housed in the building. (A floor plan

of the Murrah Building is detailed in Exhibit A) Damage extended throughout Oklahoma City's downtown, covering an estimated 48-square-block area. The explosion overturned automobiles and numerous vehicles erupted into flames after the blast. Extensive structural damage was not limited to the Murrah Building, but also extended to the Regency Tower, a twenty-four story, 273-unit apartment complex, located one block to the west. Additionally, directly north of the Murrah Building, the two-story Oklahoma Water Resources Board office building, the six-story, historic, Journal Record Building, and the three-story Athenian Building received heavy damage. Surrounding structures which received the brunt of the explosion included the First Methodist Church and YMCA, to the east; the federal courthouse, to the south; and, the St. Joseph's Old Cathedral and Rectory, and U.S. Post Office, to the west. (see Exhibit B)

The explosion knocked-out primary and back-up phone lines for the Emergency Medical Services Authority (EMSA), the local ambulance service. Subsequently, 9-1-1 was the only communication remaining. The first call for medical assistance was received by EMSA at 9:03:25 a.m. However, upon hearing the blast, seven emergency medical service (EMS) units responded from EMSA's headquarters (N.W. 10th St. & Walker Ave.).

First-in fire companies were faced with an overwhelming rescue operation. The closest fire/emergency response units to the scene were at the Oklahoma City Fire Department's Station One, five blocks away. Emergency personnel and equipment from this station responded immediately to the bombing site. A meeting of the department's chiefs was in progress at Station One at the time of the explosion. They too reacted immediately to the sound of the blast and relocated to each one's appropriate point of command. As personnel and apparatus approached the scene, firefighters encountered debris scattered throughout the streets, covering several blocks surrounding the Murrah Building. Passages had to be cleared to allow entry of responding equipment. Additionally, firefighters encountered injured victims fleeing the blast site. Realizing that injuries would be numerous, two medical triage areas were quickly established. Primary triage and treatment was initially positioned at N.W. 6th St. and Robinson Ave. (with medical command), but was later moved to N.W. 5th St. and Robinson Avenue. Secondary triage and treatment was established at the federal building. The injured were staged in these areas awaiting assessment, immediate treatment, and prioritized transportation.

Without delay, fire, emergency medical, law enforcement personnel, voluntary organization workers and many civilians, entered the bombed structure in a massive search and rescue effort. In some instances, human chains were formed to accommodate the safe and rapid removal of victims as they were located. A minimum of two subsequent "bomb scares" forced the evacuation of these personnel. The evacuation of the structure allowed officials to create a controlled perimeter around

the dangerous site. Rescue workers were not allowed to re-enter the site until confirmation was given that no additional explosive devices were located.

Immediately following the blast, an Incident Command System (ICS) was quickly established by the Oklahoma City Fire Department, to manage the intensive search and rescue mission. The "system" effectively handled the massive influx of resources which included federal, state, local and voluntary agency response personnel and equipment, under the sole command of the Oklahoma City Fire Department. The Oklahoma City Police Department handled the traffic and security aspects of the event in coordination with the Oklahoma County Sheriff, state and federal agencies.

At 9:00 a.m. on April 19th, Oklahoma Department of Civil Emergency Management (ODCEM) personnel were conducting a planning meeting with state agency liaison officers at the Oklahoma National Guard Military Academy, located at N.E. 63rd St. and Kelley Avenue. The State Emergency Operations Center (SEOC) is located in the tunnel between the Sequoyah and Will Rogers Buildings on the State Capitol Complex. The SEOC was constructed in 1963, during the height of the cold war, and designed to withstand the shock of a 20-megaton blast as close as three miles away, coincidentally, the approximate distance to the Murrah Building. Even though the explosion was reported to have been felt as far as 30 miles from the site, the first notification to the SEOC came at 9:04 a.m., when personnel at the military academy made contact. All SEOC personnel, as well as the state agency liaison officers, were advised to report to the operational area of the center immediately. The Disaster Recovery Manager was issued two hand-held radios and ordered to deploy to the site by State Director Tom Feuerborn. By 9:25 a.m. the center was fully operational and Director Feuerborn made the decision to maintain 24-hour operations until further notice. State agencies initially represented in the SEOC included the Oklahoma Department of Public Safety, the Oklahoma Department of Human Services, the Oklahoma Military Department, the Oklahoma Department of Health and the Oklahoma Department of Education. These agencies were shortly supplemented by the National Weather Service, the Civil Air Patrol and the American Red Cross.

The incident was reported to the Federal Emergency Management Agency (FEMA), Region VI headquarters, in Denton, Texas, at 9:30 a.m. Regional Director R.L. "Buddy" Young ordered the immediate activation of the Regional Operations Center (ROC), the regional, federal counterpart to the SEOC.

At 9:45 a.m. Governor Frank Keating ordered a "State of Emergency" (see Exhibit C) and released from duty all Oklahoma City area, non-essential state personnel as a safety measure. Accompanied by their staffs, the Governor and Lieutenant Governor Mary Fallin arrived at the SEOC at 10:05 a.m. and received an immediate situation briefing from ODCEM Director Feuerborn. For the remainder of the day the Governor alternated his command between the SEOC and the disaster site.

By 10:35 a.m. Regional Director Young had briefed FEMA headquarters, in Washington D.C., and organized a group of key staff to accompany him to Oklahoma City. FEMA immediately put Urban Search and Rescue (US&R) Task Forces from Phoenix, Arizona and Sacramento, California on alert and at 10:55 activated each team for deployment to Oklahoma City.

April 19th at the Site

After arriving at the Murrah Building, the Disaster Recovery Manager located the Incident Command Post (ICP) at the intersection of N.W. 6th St. and Harvey Avenue. He made initial contact with the Incident Commander (IC) and offered all state assets necessary to supplement the response efforts. At the time, the most pressing need was to cordon-off and maintain a secure perimeter around the structure. The option of National Guard troops and additional Public Safety Officers was discussed and agreed upon. The Recovery Manager attempted to make this request to the SEOC via cellular telephone, but found the effort to be impossible due to an obvious system overload. The transmission was completed by means of a hand-held radio.

Following this initial communication between the site and the SEOC, the first of at least two bomb scares occurred. People began running north from the Murrah Building, relaying that another bomb had been located. Without the ability to either confirm or deny the threat, the IC made the decision to relocate the command post two blocks north to a vacant parking lot on the southwest corner of N.W. 8th St. and Harvey Avenue. After the relocation of both the Oklahoma City Fire Department Mobile Command Vehicle and the Oklahoma City Police Department Mobile Command Vehicle, other similar units began arriving in the same parking lot. Such units included vehicles representing the Federal Bureau of Investigation (FBI), the Bureau of Alcohol, Tobacco and Firearms (BATF) and the Drug Enforcement Administration (DEA). Southwestern Bell Telephone Company also parked a truck at this location for the purpose of issuing free-use cellular phones to any and all response personnel. They also reported that a temporary "cellular-on-wheels" site was currently being erected to accommodate the high-traffic cellular use in the downtown area.

By 10:30 a.m., the State Exercise Training Officer arrived at the ICP to supplement the forward State Emergency Management element. Reports from the National Weather Service predicted a threat of rain by the afternoon and the request was made through the SEOC to have the National Guard erect a tent near the ICP. Due to the lack of shelter and the increasing number of emergency personnel and equipment arriving at the confined parking lot, the IC made the decision to once again relocate the ICP. The new location selected was directly across the street in the Southwestern Bell Telephone Company's Corporate Headquarters parking lot (S.E. corner of N.W. 8th St. and Harvey Ave.), an option which was given to the IC by company officials.

The new location was far more accommodating to emergency personnel as it provided a larger parking area, a sheltered garage where voluntary agencies and private organizations could distribute food and store immediate donations, and the office building, itself, which met the sanitary needs of the emergency/relief personnel and later housed the first two US&R Task Forces.

Additional mobile command units arriving at the ICP represented the U.S. Marshals Service and two vehicles from the Oklahoma Department of Public Safety. The Oklahoma National Guard erected their tent in the parking lot, with assistance from Oklahoma City Public Works, and maintained forward operations from this site throughout the event. Chained-link fencing was placed around the parking lot and access was restricted on Harvey Ave. from 8th St. south.

Through the aid of Oklahoma City officials, the FBI secured a vacant building located at 11 N.E. 6th St. to utilize as a command post for the investigative element of the crime. The BATF and the DEA joined forces with the FBI in this effort and their respective staff spent the afternoon establishing the operations center, while field operations continued. Weldon Kennedy, of the Phoenix, Arizona office of the FBI, was assigned Special Agent-In-Charge of the incident and arrived at the FBI command post later that evening.

The two-man State Emergency Management forward element maintained a walking post which consisted of periodic discussions with Oklahoma City Fire Department, Oklahoma City Police Department and Oklahoma County Emergency Management concerning potential needs in which state resources could be utilized. Additionally, constant liaison relationships were maintained with the Oklahoma Department of Public Safety, the National Guard and the American Red Cross, to attempt to better coordinate a unified effort. Requests from the Oklahoma Medical Examiner's Office were channeled directly through the SEOC, though periodic visits, by the forward element, were made to the temporary morgue, established at the First Methodist Church Building at the N.E. corner of 4th St. and Robinson Avenue.

By mid-afternoon, the promised precipitation arrived and donated rain gear was issued by volunteers. In fact, by early afternoon, it became increasingly apparent that donated goods would be a problem for the duration of the event. Commercial tractor-trailers, pick-ups and other private vehicles began lining-up at the corner of N.W. 8th St. and Harvey Ave., loaded with everything from wheel barrows to football helmets. Voluntary organizations began storing items as best they could, but new drop-off locations had to be established rapidly and inventory control became an overwhelming task. It should also be noted that the ICP was not the only location where donated goods were being delivered. This added to the overall lack of donations coordination and represents one of the major deficiencies in the state and local planning effort.

Another escalating problem facing the IC was the increasing influx of media representatives arriving at the scene. The decision was made to locate all media personnel within a vacant parking area, covering approximately one-half a square block, on Harvey Ave. between N.W. 6th and 7th streets. This area was roped-off, with access allowed to credentialed personnel. While it was not as close to the Murrah Building as the media would have liked, it did offer an unobstructed view of the structure. Oklahoma City Police and Fire public information specialists provided initial periodic updates to the media and a joint federal, state and local press conference was scheduled for the following morning at the Civic Center Music Hall's "Hall of Mirrors", located at 201 Channing Square.

Due to the nature of the incident, crime scene standard operating procedures had to be followed and the FBI cordoned-off an inner perimeter around the Murrah Building, allowing access on N.W. 5th St. at either the Robinson Ave. or Harvey Ave. intersection. The FBI also began a procedure to create and issue numerical, photo-identification badges to necessary personnel. Additionally, Oklahoma City established a day-pass procedure which restricted unauthorized personnel entry to the site.

The Oklahoma City Fire Department established a Forward Command Post inside the interior loading dock of the Murrah Building. This site was located at the northwest corner of the building, inside the single-story concrete structure which stood alone, yet was in contact with the Murrah Building. The Federal Emergency Management Agency's (FEMA's) Incident SupportTeam (IST) was activated and co-located in the Forward Command Post. The IST is a trained and equipped unit of operational personnel from around the nation, designed to manage and coordinate the site-specific FEMA response mission during catastrophic disasters. Equipment, including electrical power, telephones, copiers, tables, chairs, and other necessary items, was immediately brought in to support their efforts.

At 3:30 p.m. the First Christian Church, N.W. 36th St. and N. Walker Ave., was established by the State Medical Examiner's Office as the site of the "Family Assistance Center" (a.k.a. "The Compassion Center"). Immediate family members received accurate briefings directly from the State Medical Examiner's Office at this location twice daily. The Assistance Center provided information, mental health counseling, and comfort to those who had fallen victim to this event or who either lost or had missing family members in the building. Center support was provided by many organizations, including the American Red Cross, the Salvation Army, the Oklahoma Funeral Directors Association, and many pastors, chaplains, and mental health professionals throughout the area, state and nation. The Oklahoma County Sheriff's Office and the Oklahoma National Guard provided security for the center.

The American Red Cross opened a shelter for those displaced by the explosion. They also activated the National Disaster Services Human Resources Team to administer large scale disaster assistance to the victims of this incident.

With donated goods and appropriate distribution becoming an increasing concern, Red Cross logistics support was provided from warehouses at the ICP and at N.W. 5th St. and Harvey Ave., inside the damaged U.S. Post Office. Other logistics sites were provided by "Feed the Children", an Oklahoma City headquartered relief organization, and the Salvation Army.

Feed The Children responded by shipping requested food and disaster supplies out of their local warehouse at 32 N. McCormick, in Oklahoma City, by processing newly donated items supplied by the public, by calling corporate contacts with requests for specifically needed items, and by supervising volunteers. They also set-up and staffed an on-site supply center near N.W. 5th St. and Robinson Ave., where a coordinated effort was established to provide needed items to rescue workers from their international headquarters at 333 N. Meridian and their warehouse.

The Oklahoma City Fire Department established their Technical Logistics Center at 225 N.W. 6th St., in a covered parking garage.

The Oklahoma Restaurant Association had just finished their annual conference when the explosion occurred. Subsequently, they quickly established a 24-hour food service operation, at the Myriad Convention Center, to feed all emergency response workers. Eventually, the Myriad was established as a center which met the needs of all personnel responding to the incident. Donated clothing, food, equipment and supplies were available on a 24-hour basis. Other volunteer and donated services included over-the-counter pharmaceutical and personal hygiene items, hair care, optometric, chiropractic, and podiatric care, and massage therapy. AT&T provided free telephone calls home for the US&R Task Forces, complimented by a free mail and parcel delivery service provided by United Parcel Service. The Myriad also housed nine of the 11 US&R Task Forces.

Critical Incident Stress Debriefings and mental health services were offered by, but not limited to, professionals from the Oklahoma City Fire and Police Departments, the Oklahoma Department of Mental Health and Substance Abuse Services, the FBI, the American Red Cross and volunteer private specialists. Additionally, crisis hotlines were established throughout the city to meet the needs of the general public.

At 4:00 p.m., CST, President Clinton announced that he had signed Emergency Declaration FEMA-3115-EM-OK. (see Exhibit D) This declaration, under provisions contained in Title V ofthe Robert T. Stafford Disaster Relief and Emergency Assistance Act (P.L. 93-288, as amended), permits the federal government to provide emergency assistance to save lives, protect property, public health & safety, and to

lessen or avert the threat of further damage. The declaration was specifically made under the authority of Section 501 (b), which Congress created to allow the President to provide immediate assistance for an "emergency involving primary federal responsibilities."

The signing of this declaration not only gave the federal government primary responsibility to respond to the disaster, but also authorized 100% federal financial reimbursement for all eligible response missions performed by local and state government. It should be noted that even though this declaration provided authority and responsibility to the federal government, the chain of command did not change. Oklahoma City Fire Department still controlled the search and rescue mission and the FBI was still in charge of the investigative mission of the federal crime which had been committed.

By late afternoon a meeting was held at the ICP between Oklahoma City Police, Oklahoma County Sheriff's Office, Oklahoma Department of Public Safety, Oklahoma Military Department and ODCEM to permanently establish an outer perimeter to the scene. Oklahoma City Police requested state support to maintain a 24-hour perimeter encompassing 18 square blocks. It was decided the north-south limits would be N.W. 8th St. and Robert S. Kerr Ave., respectively. The perimeter was maintained on N. Hudson Ave. on the west and N. Broadway on the east. (see Exhibit E) Numbers of personnel from each entity were decided upon and the outer perimeter was immediately established around-the-clock, until further notice. Prior to this meeting, outer perimeter control had been maintained by Oklahoma City Police and the Oklahoma County Sheriff's Office.

The inner perimeter, initially encompassing the Murrah Building and adjacent damaged structures, which could potentially contain evidence, was secured by the FBI and subsequently reduced as areas were combed and determined free of additional evidence. This was accomplished through federal law enforcement manpower and temporary chained-link fencing. The square block on which the Murrah Building sat remains secured, by the General Services Administration (GSA), at the date of this report.

At the SEOC

When the decision was made at 9:25 a.m. to establish 24-hour operations, selected ODCEM staff were sent home, and were required to report to the SEOC for a midnight to noon shift. The ODCEM Chief of Operations also required staff to report 15 minutes prior to each shift for briefing purposes. A similar 12-hour-on, 12-hour-off format was established for forward operations, with additional time inserted for

briefing/de-briefing responsibilities. State agency liaisons were requested to establish staffing patterns consistent with ODCEM's, to ensure operational continuity.

FEMA Regional Director Young and his staff arrived at the SEOC at 2:05 p.m. and immediately began coordinating federal operations. ODCEM Director Feuerborn received notification from Washington, D.C. that FEMA's National Director, James Lee Witt, would arrive in Oklahoma City at approximately 7:30 p.m. After a conference call with Washington and the FBI, FEMA's Mobile Emergency Response Support (MERS) was alerted to establish secure satellite communications at the FBI's investigative center. Discussion ensued among executives to establish a FEMA Disaster Field Office (DFO) and to appoint both a Federal and a Defense Coordinating Officer.

At 5:00 p.m. Director Feuerborn and Lt. Governor Fallin briefed Oklahoma's Congressional Delegation.

FEMA Director Witt and selected staff arrived at the SEOC at 8:10 p.m. By this time FEMA had response specialists in the field and task-specific personnel, i.e., public affairs, public health, resource management and GSA, in Oklahoma City designing appropriate response strategies.

The US&R Task Force from Phoenix arrived at approximately 10:45 p.m. to meet with command personnel, survey the incident structure, and to conduct a pre-work assessment of the overall situation. The Sacramento US&R Task Force arrived at 11:00 p.m. These two initial teams were housed at the Southwestern Bell Headquarters Building. An additional nine US&R teams were activated and housed at the Myriad Convention Center.

The two ODCEM forward operations personnel were relieved by the Senior Operations Officer at approximately 11:35 p.m. They returned to the SEOC and briefed the Director, Governor and his staff on continuing operational developments and issues at the site.

April 20th and beyond

Following the chaotic series of activities on April 19th, structure and responsibility gradually emerged throughout the response and recovery efforts. Strategy meetings at the SEOC were held early every morning between Witt, Feuerborn and their accompanying personnel. Situation reports were developed and distributed daily to both the Governor and the President. The FBI held investigative meetings twice daily and all key players briefed the public at press conferences, on a minimum schedule of once per day.

Special Agent Kennedy made it clear in his initial April 20th meeting that priorities were as follows: 1. locate any survivors; 2. remove any victims; and, 3. process the crime scene. This basic directive helped to avert many potential problems which could have arisen in this unique situation.

A Disaster Field Office (DFO) was established at 420 W. Main St. where state and federal efforts could be unified. A request from the IC to establish a Multi-Agency Coordination Center (MACC), where federal and state personnel could support local coordination efforts, was accomplished and created within the confines of the Myriad Convention Center on April 23rd. This facility also housed the Joint Information Center, which facilitated the release of all public information.

The MACC was reduced in size and transferred to the Oklahoma City 9-1-1 Center, formerly the Oklahoma City Emergency Operations Center (4600 N. Martin Luther King Blvd.), on April 27th. All coordination of requests for assistance were reverted back to the IC, SEOC and DFO on May 2nd.

At the site, the search and rescue mission continued for 17 days. A total of 11 US&R Task Forces were activated to support the Oklahoma City Fire Department. (see Exhibit F) The mountain of debris which was deposited on the north face of the Murrah Building was removed almost entirely by hand, in five-gallon buckets. This was done for three reasons: 1. The possibility that a survivor could be located and out of respect to each fatality and their families; 2. The continuing concern over the structural integrity of the building, which prevented the use of heavy equipment; and, 3. The control and analysis of each piece of debris removed for evidentiary purposes. The operation was also delayed by mother nature. During the 17-day mission, rescue workers were subjected to high winds, rain, sleet, lightening and hail on numerous occasions.

Shortly after midnight on May 5th, search and rescue operations were determined to be officially complete. It was anticipated at that time that three bodies remained in the rubble. Due to the believed location and potential safety hazards, the decision was made to leave the remaining bodies in the rubble until after the implosion of the structure.

Long-term Recovery

On April 26th, the State of Oklahoma requested and received Presidential Major Disaster Declaration FEMA-1048-DR-OK. (see Exhibit G) This declaration activated a multitude of recovery and relief programs for victims' families, injured, small business owners and public entities. Consistent with this long-term relief effort, the "Oklahoma City Bombing Disaster Resource Coordination Committee" (RCC), made-

up of government and voluntary agencies and donated funds administrators, was formed to service the unmet needs of victims which were not covered under the declaration. The RCC continues to meet on a weekly basis and to date has distributed over $2 million of donated funds.

Pursuant to Presidential Declaration FEMA-1048-DR-OK, a "Recovery Service Center" (RSC) was officially opened at Shepherd Mall, N.W. 23rd St. and Villa, on Saturday, April 29th. The RSC allowed victims of the disaster an opportunity to visit face-to-face with local, state, federal and voluntary agency representatives who administered relief programs provided under the declaration. As soon as the President signed the declaration on the 26th, the national toll-free teleregistration system was activated for victim registration.

The Family Assistance Center (a.k.a. The Compassion Center) was officially transferred to the Oklahoma Department of Mental Health and Substance Abuse Services on May 5th and became known as "Project Heartland". A facility for long term mental health services was established in Oklahoma City and designated as the Project Heartland Center, located at 5500 N. Western. It continues to provide support for survivors, families, rescue workers, and others affected by the disaster.

The Alfred P. Murrah Building was imploded at 7:02 a.m., Tuesday, May 23rd. The three remaining victims were found where predicted.

On June 11-13, 125 local, state and federal response partners met in Oklahoma City to discuss the disaster and make recommendations for improved response. The Oklahoma Department of Civil Emergency Management (ODCEM) participated in this review and results of the conference are on file at FEMA's headquarters in Washington, D.C.

From the time of the blast, through the building implosion, Oklahoma City Police received no reports of looting or price gouging. Additionally, it should be noted that there was no evidence of individuals attempting to profit from the disaster, i.e., T-shirt and paraphernalia sales, etc. For this, all Oklahomans should be commended.

Throughout the event, ODCEM utilized a full-time staff of 25 to maintain 24-hour operations (a 4/19/95 Staff Roster is provided in Exhibit H). Since that time, six of the 25 have left the department, yet all should be commended for their determined efforts under extreme conditions.

In Closing

The purpose for the production of this document is to provide an overview of the disaster, identifying actions taken, operational strengths and lessons learned. The Oklahoma City Bombing is an event which is unique to the state and nation. Throughout the United States, emergency services agencies and organizations are reviewing plans and procedures, based on the Oklahoma disaster. Because of this event, our state's personnel and agencies/organizations, which had direct involvement in the response and recovery missions, have an added responsibility to inform the nation of what happened, what worked and what could have been done better. The most important information in this document is located under the section "Lessons Learned". This is not meant to mean lessons learned from the operations outweighed the strengths. It simply means that appropriate personnel can learn more from problems and recommendations than from successes realized through existing procedures. This report is limited to an emergency management perspective. From this point of view, we have outlined seven rather generic items which we list as major lessons learned from this event.

They are as follows:

1) The "Heartland" of America is no longer isolated from the reaction of political action groups of either the extreme left or right;

2) The Integrated Emergency Management System (IEMS) works best when all functions are in place;

3) The Federal Response Plan needs to be modified to incorporate the response activities and missions of Federal Law Enforcement Agencies;

4) State and local plans and exercises need to be changed to incorporate response forces working in and around a crime scene;

5) State and local plans should mirror the Federal and Regional Response Plans with additional emergency support functions added to fit the state and local situation;

6) A need exists for national and regional integrated training between federal, state and local emergency management, fire and law enforcement services, in managing the consequences of terrorism incidents; and,

7) A federal, state and local cooperative partnership is essential for successful response and recovery operations, following a catastrophic disaster.

As previously stated, these seven observations serve as merely umbrella headings to many planning and procedural modifications which should be examined by emergency management organizations at all levels of government, prior to the next

similar event. There is no doubt that the response/recovery missions achieved by federal, state, local and voluntary organizations, pursuant to the bombing, should and will be viewed as a successful operation. However, if the knowledge and experience gained from this disaster remains docile in the minds of those involved, the probability of future successful operations will not increase. It is for this reason that this report is provided.

Much time has passed since the day which will be benchmarked as a period which illustrated the very best and very worst mankind has to offer. Consequently, much has been done to honor those who served. This is appropriate because actions completed by these men and women were done so under extraordinary circumstances and conditions. The last survivor of the blast was pulled from the rubble at 10:05 p.m. the first day, yet determination and motivation remained high for 16 more days, under less than ideal conditions.

However, there is but one fact, alone, which supersedes all others concerning this disaster. On the 19th of April, 1995, 168 people lost their lives for no reason. This shall never be forgotten.

The Oklahoma Department of Civil Emergency Management

After Action Report

Alfred P. Murrah Federal Building Bombing

19 April 1995 1995 in Oklahoma City, Oklahoma

Detailed Summary of Daily Activity

Daily Summary, Introduction and Log Entries for April 19 09:02 CDT - April 25

The following text is a compilation of significant events and log entries related to the April 19th bombing of the Alfred P. Murrah Federal Building. This information has

been extracted from the Oklahoma Department of Civil Emergency Management's Emergency Information System (EIS), a computerized emergency management system utilized at the State Emergency Operations Center (SEOC). This text identifies only the major developments concerning the disaster. It does not identify every action taken and requested at the SEOC. Times, where provided, are done so to adequately illustrate the sequence of events which occurred. Each is consistent with ODCEM records, though they might not coincide precisely with after-action reports constructed by other agencies.

WEDNESDAY, APRIL 19, 1995

0902 HRS: An explosion occurs in downtown Oklahoma City at the Alfred P. Murrah Federal Building. Oklahoma City Fire Station One responds immediately, reacting to the sound. Fire, emergency medical, and law enforcement personnel, American Red Cross Disaster workers, and civilians, enter the bombed structure without delay as they immediately initiate a massive search and rescue effort.

0904: The explosion is reported to the Oklahoma Department of Civil Emergency Management (ODCEM) by staff in the field. State agency liaison officers are requested to report to the SEOC immediately.

0907: The Oklahoma County Chapter of the American Red Cross responds to the incident, followed shortly by the local Salvation Army unit. Each begins immediate services to victims, as well as initial assessment of the situation.

0920: The ODCEM Disaster Recovery Manager is dispatched to the scene. State agency liaison officers begin arriving at the SEOC.

0925: The SEOC is fully operational and State Director Tom Feuerborn orders 24-hour operations until further notice. Selected staff are sent home to report for the second shift beginning at 2400. Agencies initially represented in the SEOC include:

- ODCEM
- The Oklahoma Department of Public Safety
- The Oklahoma Military Department
- The Oklahoma Department of Human Services
- The Oklahoma Department of Health
- The Oklahoma Department of Education
- The National Weather Service
- The Civil Air Patrol

0930: The Federal Emergency Management Agency (FEMA) Region VI, in Denton, Texas, is notified of the incident and immediately activates the Regional Operations Center (ROC).

0945: Governor Frank Keating orders a "State of Emergency" and releases all non-essential state employees, in the Oklahoma City area, as a safety measure.

1000: The National Weather Service (NWS) reports that weather will deteriorate over the next six hours.

1005: Governor Keating and selected staff arrive at the SEOC and receive an initial situation briefing from Director Feuerborn.

1015: ODCEM Forward Operations reports a "bomb scare" at the site, resulting in the relocation of the Incident Command Post (ICP) to the southwest corner of N.W. 8th St. and Harvey Avenue.

1030: The ODCEM Exercise Training Officer arrives at the ICP to supplement forward operations.

1035: FEMA Regional Director Buddy Young reports to Director Feuerborn that FEMA National Headquarters, in Washington D.C., has been briefed on the situation and Urban Search and Rescue (US&R) Task Forces from Phoenix, Arizona and Sacramento, California have been put on alert for immediate deployment to Oklahoma City.

1055: FEMA activates the Phoenix and Sacramento US&R Task Forces and begins organizing a list of additional US&R teams to supplement future efforts in Oklahoma City. Additionally, FEMA activates an Incident Support Team (IST), consisting of response specialists nationwide, to report to Oklahoma City and coordinate the efforts of incoming US&R teams.

1100: The FEMA Regional Director and selected staff deploy from Denton, Texas, en route to the SEOC.

1115: Due to limited space and approaching weather, the Incident Commander (IC) relocates the ICP to the southeast corner of N.W. 8th St. and Harvey Ave., in the parking lot of Southwestern Bell Telephone's Corporate Headquarters. Chained-link fencing is brought in to effectively cordon-off the area.

1150: Military medical personnel arrive to supplement the Emergency Medical Services Authority (EMSA) with the triage mission at the site.

1200: With the aid of Oklahoma City officials, the Federal Bureau of Investigation (FBI) secures a building at 11 N.E. 6th St. to serve as a command post for investigative efforts by law enforcement agencies. Weldon Kennedy, of the Phoenix, Arizona office of the FBI, is named Special Agent-In-Charge and the incident is titled "OK BOMB".

1330: A temporary morgue is established in the First Methodist Church, N.W. 4th St. and Robinson Avenue.

1405: FEMA Regional Director and staff arrive at SEOC. A conference call is held with headquarters and FEMA's Mobile Emergency Response Support (MERS) is alerted to establish secure satellite communications at the FBI investigative center. The General Services Administration is asked to find adequate office space for the establishment of a Disaster Field Office (DFO). Director Feuerborn is advised that FEMA Director James Lee Witt will be arriving in Oklahoma City at 1930 HRS.

1530: The Office of the State Medical Examiner establishes a "Family Assistance Center" (a.k.a. "Compassion Center") at the First Christian Church, N.W. 36th St. and Walker Avenue. Security is provided by the Oklahoma County Sheriff's Office and the National Guard.

1600: President Clinton announces the signing of Emergency Declaration 3115-EM, which, under provisions of the Robert T. Stafford Disaster Relief and Emergency Assistance Act, permits the federal government to provide emergency assistance to save lives, protect property, public health and safety, and to lessen or avert the threat of further damage. The declaration is specifically declared under the authority of Section 501 (b), which allows the President to provide immediate assistance for an "emergency involving primary federal responsibilities".

1630: Staffing pattern, consisting of Oklahoma City Police, Oklahoma County Sheriff's Office, Department of Public Safety and Oklahoma Military Department personnel, is established to cordon-off an 18-square-block area on a 24-hour basis.

1700: Director Feuerborn and Lt. Governor Fallin brief Oklahoma's Congressional delegation at the SEOC.

1830: The American Red Cross opens a shelter for victims displaced by the explosion. Local hospitals report 472 injured and admitted or treated and released.

2010: FEMA Director Witt and staff arrive at the SEOC.

2205: The last survivor of the explosion is removed from the rubble.

2245: The Phoenix US&R Task Force arrives at the site.

2300: The Sacramento US&R Task Force arrives.

2335: The ODCEM Forward Operations personnel are relieved at the site and return to the SEOC to brief the State Director, Governor and his staff.

THURSDAY, APRIL 20, 1995

0004 HRS: American Red Cross completes survey of area hospitals and reports 702 disaster victims seen.

0100: Oklahoma City Fire Department reports completion of their primary search, including all of the Murrah Building still standing, third floor and above.

0200: FEMA MERS arrives to support FBI and other response agencies. They locate at the FBI Investigative Headquarters, 11 N.E. 6th Street. Additionally, a Disaster Mortuary Team (DMORT), provided by Public Health Services, arrives to support the Medical Examiner's Office.

0554: National Weather Service reports improving weather through Friday, with mostly sunny skies.

0659: Southwestern Bell Telephone completes the installation of a mobile cellular site in downtown Oklahoma City, to accommodate high-traffic use.

0730: Agent Kennedy conducts his first inter-agency staff meeting for law enforcement officers involved in the investigative mission of the disaster. He makes it clear that priorities are as follows: 1. locate any survivors; 2. remove any victims; and, 3. process the crime scene.

0900: An initial media briefing is held at the Oklahoma City Civic Center Music Hall's "Hall of Mirrors".

From this point on, daily events will be denoted by a square, rather than a time entry.

- Portable X-Ray equipment and trained staff are deployed from University Hospital to the Medical Examiner's Office.
- Critical Incident Stress Debriefings (CISDs) are established for rescue workers and Governor Keating announces the implementation of a 24-hour, statewide hotline to provide counseling support for victims and families of those involved in the bombing.

- An evidence collection warehouse is established at 101 N.W. 4th Street.
- Five hundred fifty (550) body bags arrive from Dallas, Texas and Memphis, Tennessee.
- The Myriad Convention Center becomes the designated location to house additional US&R Teams responding to the disaster. The Oklahoma Restaurant Association establishes 24-hour feeding operations, at the Myriad, to accommodate all rescue workers.
- American Red Cross President Elizabeth Dole arrives in Oklahoma City to tour the bomb site and monitor ARC operations.
- US&R Task Forces from Virginia Beach, Virginia, and New York City, New York, arrive in Oklahoma City and begin 12-hour, alternating shifts with the Phoenix and Sacramento teams.
- Federal Coordinating Officer Dell Greer arrives in Oklahoma City and requests General Services Administration (GSA) support in identifying a location to establish a Disaster Field Office (DFO). Additionally, the following Emergency Support Functions (ESFs), identified in the Federal Response Plan, are activated for the operation:
    - ESF 2 Communications
    - ESF 3 Public Works and Engineering
    - ESF 4 Firefighting
    - ESF 5 Information and Planning
    - ESF 6 Mass Care
    - ESF 7 Resource Support
    - ESF 8 Health and Medical Services
    - ESF 9 Urban Search and Rescue
- FEMA requests the Department of Defense (DOD), through appointed Defense Coordinating Officer (DCO) Col. Stuart Bornhoft, provide six C-141 Starlifter Transports in support of the operation.
- Oklahoma First Lady Cathy Keating announces a Statewide Prayer Service to be held at 3:00 p.m., Sunday, April 23rd, at the Oklahoma State Fairgrounds.

FRIDAY, APRIL 21, 1995

- The two-man, ODCEM forward operations day team is reduced to one, as the Disaster Recovery Manager assumes his responsibilities as the State Coordinating Officer of the disaster.
- The Oklahoma State Health Department inspects the State Medical Examiner's Office for possible biological contamination and finds M.E. procedures acceptable. They also, work with the Oklahoma City Fire Department to identify a disinfectant which can be sprayed on bodies to control bacteria and odor.
- The American Red Cross reports 68 individuals were housed at St. Luke's Methodist Church on Thursday night. ARC also advises numerous Disaster

Welfare Inquiries have been received. Through these inquiries, ARC reports 711 victims accounted for and 167 victims missing.

- US&R Task Forces arrive from Montgomery County, Maryland, and Los Angeles County, California, to support efforts of the four prior teams.
- At the request of Oklahoma City, ODCEM and FEMA agree to assist in the establishment of a Multi-Agency Coordination Center (MACC), at the Myriad Convention Center, where local response efforts and resources can be coordinated. Additionally, the decision is made to establish a Joint Information Center (JIC), within the MACC, where public information and media inquiries can be coordinated.
- Oklahoma Military Department supports in the transfer of a suspect from Perry, Oklahoma, to Oklahoma City.

SATURDAY, APRIL 22, 1995

- Heavy rain and high winds slow search and rescue operations throughout the day.
- U.S. Speaker of the House of Representatives Newt Gingrich takes an early morning tour of the bomb site, escorted by FEMA Director Witt and representatives of the Governor's office.
- The MACC, located in the Myriad Convention Center, becomes operational. Personnel at the MACC include representatives of Oklahoma City departments, Emergency Medical Services Authority, Oklahoma County Emergency Management, Forward Operations for ODCEM, FEMA advisors, the National Weather Service, the American Red Cross and technical advisors from the U.S. Forestry Service.
- The Disaster Field Office (DFO) begins operation at 420 W. Main St. In this facility both the Federal and State Coordinating Officers locate with their technical staffs and work the response, long-term recovery and administrative aspects of the disaster. Additionally, a Congressional Liaison Office is established at the DFO to coordinate inquiries from U.S. Senators and Representatives.
- The U.S. Small Business Administration (SBA) establishes a declaration for disaster damage applications.
- The FEMA Donations Coordination Support Team arrives at the DFO.
- FEMA's Office of Emergency Information and Public Affairs begin periodic satellite transmissions of pool video shot by US&R team members inside the Murrah Building.
- The Regional Operation Center (ROC), in Denton, Texas, closes. Future federal resource support will be coordinated through the DFO.
- US&R Task Forces from Fairfax County, Virginia, and Metro Dade County, Florida, arrive in Oklahoma City to supplement the efforts of the six previous teams.

- The U.S. Public Health Service establishes a medical support unit to provide assistance to the Disaster Mortuary Team (DMORT). The Oklahoma City Veterans Administration Hospital is tasked to provide logistical support to the DMORT. The DMORT meets with city, county and state health officials periodically, to provide updates. Also, 30 volunteer morticians, from the Oklahoma Funeral Directors Association, provide support to the DMORT, the Medical Examiner's Office and the Family Assistance Center.
- The 61st Explosive Ordnance Disposal Unit completes inspection of the bomb site. No additional explosive devices are found.

SUNDAY, APRIL 23, 1995

- Rescue efforts proceed slowly due to the instability of the Murrah Building. Rain, lightening and wind hamper search efforts. Secondary searches of surrounding buildings continue. The structural integrity of the federal courthouse and U.S. Post Office are determined to be safe.
- An Emergency Survivor Injury Registry is initiated by the Oklahoma Health Department, with assistance provided by the Center for Disease Control. The registry assists officials in victim identification and in documenting injuries and any on-going medical needs.
- The possibility of bacterial contamination continues to be a concern at the bomb site. Five hundred (500) saranex-coated TYVEK suits are ordered, through FEMA, for use by personnel at the scene.
- At the MACC, the Joint Information Center (JIC), consisting of public information specialists from all levels of government, becomes operational.
- FEMA approves "Immediate Needs" crisis counseling funds of $142,350 to assist the state in providing counseling services. These funds are transferred to the Oklahoma Department of Mental Health and Substance Abuse for program administration.
- An In-Kind Donations Coordination Team is established at the DFO, consisting of representatives of FEMA, ODCEM and voluntary organizations. The team's functional responsibilities are outlined as follows:
    - Process information provided by FEMA's toll-free donations hotline.
    - Establish a single, coordinated, unmet needs list.
    - Provide direct communication with the MACC.
    - Address the management of spontaneous volunteers.
    - Provide a liaison to the local business community.
    - Share information concerning warehouse space and current inventory.
- The American Red Cross assumes responsibility of the residents of the Regency Tower, who are currently relocated at the Best Western Trade Winds Motel, E. I-40 and Martin Luther King Boulevard. The ARC opens a service center at the motel and works with each displaced family on an individual basis of need.

- The 16-person, 54th Quartermaster Graves Registration Unit, from Ft. Lee, Virginia, arrives in Oklahoma City to support the Medical Examiner's Office at the temporary morgue, located in the First Methodist Church, N.W. 4th St. and Robinson Avenue.
- More than 40,000 people converge at the Oklahoma State Fairgrounds for the Prayer Service, attended by President and Mrs. Clinton, Governor and Mrs. Keating, and Mayor and Mrs. Norick. The Reverend Billy Graham provides the inspirational message.

MONDAY, APRIL 24, 1995

- Weather improves for the rescue workers at the site. Shoring of the structure continues and areas along the base of the structure, in which victims are thought to be located, take on familiar names, such as the pit, the bowl, the forrest, the crater and the cave. In support of the Oklahoma City Fire Department, US&R Task Forces continue 24-hour operations, with four teams alternating during the day and two at night.
- US&R Task Forces from Menlo Park, California, and Puget Sound, Washington, arrive in Oklahoma City. Teams from Sacramento, California, and Phoenix, Arizona, demobilize.
- ODCEM and FEMA personnel conduct a preliminary applicant's briefing for Oklahoma City officials, outlining long-term recovery issues and potential funding sources.
- A Biohazard Risk Assessment Team completes its one-day site visit to advise on biological and chemical hazards. They relate the appropriate use of protective equipment and the related health and safety issues to rescue workers.
- Structural shifting is detected at the temporary morgue (First Methodist Church) and the possibility of relocation is discussed. The decision is made to have engineers constantly monitor the situation and report if relocation becomes necessary.
- An additional full-body X-Ray machine is obtained through FEMA to support efforts of the Medical Examiner's Office.
- The SBA announces that local business owners, who are currently unable to access their structure, could be able to receive some temporary financial assistance.
- People who have vehicles parked outside the interior perimeter are allowed to claim their automobiles through the Oklahoma City Police Department.
- FEMA daily situation reports are made available to the public through the internet.

TUESDAY, APRIL 25, 1995

- The search and rescue mission remains constant, but proceeds slowly due to the massive piles of debris and continuing concern over the structural integrity of the building. In many instances the mission is interrupted until additional shoring measures can be implemented.
- Two firefighters sustain injuries while working at the scene. One, an Oklahoma City firefighter, is transported to St. Anthony's Hospital where he is treated and released. The other, a Nichols Hills firefighter, is treated at the scene and released for duty.
- Lt. Governor Mary Fallin participates in a Donations Coordination Team meeting held at the DFO. From the meeting, a joint voluntary agency media release is developed reflecting the position that there is no longer a need for mass quantities of goods or volunteers.
- Oklahoma City, ODCEM and FEMA staff perform a joint Preliminary Damage Assessment (PDA) of the affected area surrounding the Murrah Building. The purpose of the PDA is to identify specific federal assistance and programs necessary to return the damaged structures and victims as closely as possible to pre-disaster condition.
- Specialists from the U.S. Army Corps of Engineers supplement efforts concerning structural integrity and blast damage distribution.
- The General Services Administration (GSA) conducts surveys necessary to find temporary and permanent office space for the federal agencies previously housed in the Murrah Building.
- Defense Coordinating Officer Bornhoft coordinates a photographic fly-over of the disaster area to assist in the investigative effort. The mission is achieved by an Oklahoma Air National Guard C-130.
- Governor Keating requests the President declare a major disaster for Oklahoma City and provide Federal Individual Assistance in the form of Temporary Housing, Low-Interest Loans, Disaster Unemployment and Individual and Family Grants. A request for Federal Public Assistance (i.e. infrastructure damages, emergency labor and materials) will be made at a later date since most of these damages are currently covered under the Presidential Emergency Declaration (FEMA-3115-EM) at a 100% federal share.

Daily Summary, Log Entries for April 26 - May 23

WEDNESDAY, APRIL 26, 1995

- The one-week anniversary of the explosion is observed at the site as Governor and Mrs. Keating, Lt. Governor Fallin and Mayor and Mrs. Ron Norick lead the rescue workers in a one-minute moment of silence at exactly 9:02 a.m.

- Search and rescue efforts continue with emphasis concentrated on the "pit" area of the building (central-interior location), where debris is heavy and victims are believed to be located. Six US&R Task Forces remain on rotating duty as the New York City and Virginia Beach teams demobilize.
- Four firefighters from Midwest City and six from Tinker Air Force Base provide continuous decontamination support to the rescue workers.
- National Guardsmen, provided by the Oklahoma Military Department, initiate an evidentiary sifting mission through rubble transported to the Oklahoma County Sheriff's gun range. This mission is tasked at the request of the FBI.
- From previous donations coordinations meetings, a Donations Task Force is identified and an organizational meeting is held at the DFO. Represented at the meeting are Lt. Governor Fallin, the Federal Coordinating Officer, State Coordinating Officer, Oklahoma City officials, the Oklahoma Department of Human Services, FEMA's donations specialists, the FEMA Voluntary Agency Coordinator, the American Red Cross, the Salvation Army, Feed the Children, Adventist Community Services, the Oklahoma Restaurant Association and Americorps. The task force is presented with two separate issues to address: 1. Items needed by individuals and families affected by the blast, and the workers supporting them; and, 2. Items needed by individuals and organizations working within the blast area. It is emphasized that the task force is not challenged with meeting the long-term needs of victims nor the donated funds which have been arriving from around the world, since the explosion.
- Two bomb dog teams arrive in Oklahoma City to support the U.S. Marshal's Service in providing security at the federal courthouse.
- The FBI releases the Regency Tower from the crime scene. Inspection of the building is completed and it is found to be structurally sound. Approximately 400 people resided in 260 apartment units at the time of the blast. Oklahoma City Metro Transit provides transportation to the displaced residents, who are allowed to enter the building and pick-up any essential items or possessions. (The Regency Tower residents were allowed to move back in after repairs were made on October 26, 1995)
- President Clinton signs Major Disaster Declaration FEMA-1048-DR, providing individual assistance to eligible applicants in Oklahoma City. The national teleregistration number is activated and victims are encouraged to apply. The Federal and State Coordinating Officers brief Oklahoma's Congressional Delegation on this development at the DFO.

THURSDAY, APRIL 27, 1995

- Rescue crews are temporarily removed from "the pit" area of the building as a concrete slab shift is detected. Engineers evaluate the situation and re-initiate the recovery operation. To date, only ten minor injuries have been sustained by rescue workers.

- Oklahoma City Public Works officials release their initial survey figures of the damaged area. Their assessment shows 312 structures sustaining some damage, 25 buildings with major structural damage and 10 buildings destroyed.
- The MACC is down-sized and relocated to the Oklahoma City Emergency Operations Center (EOC), 4600 Martin Luther King Boulevard. Emergency Support Function Three (ESF-3: Public Works and Engineering), ESF-9 (Urban Search and Rescue) and the Joint Information Center (JIC) move to the DFO. The remaining ESFs and ODCEM Forward Operations move to the Oklahoma City EOC.
- Americorps volunteers assist the Donations Coordination Team with warehouse inventory and goods reception at various sites.
- Through the aid of ODCEM and the Oklahoma Department of Central Services, FEMA and GSA locate a site to establish a Recovery Service Center (RSC), where applicants can visit one-on-one with representatives of various programs offering aid. The location is in Shepherd Mall, N.W. 23rd St. and Villa. Plans are made to open the RSC Saturday, April 29th, but GSA and SBA immediately relocate to handle administrative functions and assist with previously disbursed loan applications. The American Red Cross makes plans the move their service center to this location and the Oklahoma Baptists plan to establish a child-care facility to aid in the assistance process.
- By close of business, 250 individuals have applied for disaster assistance through FEMA's teleregistration service.

FRIDAY, APRIL 28, 1995

- The Menlo Park US&R Task Force completes securing overhead hazards (large concrete slabs) on the north and east sections of the building. Crews continue working in "the pit" area, where several more victims are believed to be located. Continued removal of debris, while necessary, is believed to weaken the remaining structure. Numerous breaks are taken for constant engineering evaluation and additional shoring efforts.
- FEMA Director Witt and his staff meet with Governor Keating and ODCEM Director Feuerborn before departing to Washington, D.C.

SATURDAY, APRIL 29, 1995

- Several more victims are recovered from "the pit" area of the building. Additional debris is removed and hanging hazards secured. Cracks in two northern columns of the building are shored with steel banding and epoxy.
- The Orange County, California, US&R Task Force arrives in Oklahoma City as the Los Angeles County and Montgomery County teams are demobilized.
- Oklahoma City Fire Department disbands the Command Post at the Southwestern Bell Telephone Building.

- The RSC is fully operational at Shepherd Mall with personnel staffed to represent the following organizations/programs:

  FEMA Disaster Housing
  FEMA/State Individual and Family Grants
  ODCEM
  Oklahoma Employment Security Commission
  American Red Cross
  Oklahoma Department of Human Services/Aging
  Salvation Army
  Department of Area-wide Aging
  SBA
  Federal Employees Education & Assistance Fund
  Social Security Administration
  Veterans Administration
  Internal Revenue Service
  Oklahoma County
  FEMA/State Public Affairs
  Oklahoma State Insurance Commission

- A telephone bank is also provided for those who have yet to apply for assistance through the teleregistration service. A total of 23 media outlets visit the RSC during the first day of operation.
- Oklahoma Representatives J.C. Watts and Frank Lucas are briefed at the DFO and tour the Murrah Building.
- The owner, head coach and several members of the Dallas Cowboys football team visit the Myriad Convention Center, Family Assistance Center and area hospitals on a good will mission.

SUNDAY, APRIL 30, 1995

- A crane and dump truck are involved in an accident at the site, but no injuries occur.
- The MACC is down-sized once again and relocated to the Oklahoma City Fire Department Technical Logistics Center at 225 N.W. 6th St., in a covered garage. All FEMA support to the MACC is transferred to the DFO or demobilized. ODCEM Forward Operations remain in the MACC.
- The U.S. Public Health Service's "Disaster Studies Health Group" begin collecting documentation concerning patients treated after the explosion.
- California Congressman Jerry Lewis is briefed at the DFO and bomb site, and visits Governor Keating and ODCEM Director Feuerborn.

MONDAY, MAY 1, 1995

- Operations at the site officially transition to a recovery mission. Work is continued by hand and with the limited use of heavy equipment, but is suspended several times due to inclement weather conditions.
- US&R Task Forces from Fairfax County and Metro Dade County are demobilized. Prior to leaving, the Metro Dade County Team presents the YMCA with $1,000 to replace damaged playground equipment.

TUESDAY, MAY 2, 1995

- Recovery operations concentrate on the "bowl" area, as structural engineers monitor the situation closely for signs of shifting. Due to unpredictable spring weather, a growing concern for the safety of the workers and the newly emphasized recovery mission, operations for the day are limited to an 0600 - 1800 HRS time frame.
- US&R Task Forces from Menlo Park and Puget Sound are demobilized, leaving Orange County as the only team remaining. At 1800 HRS the decision is made to halt all US&R support, but to keep technical specialists on until May 6 to act in an advisory capacity to Oklahoma City Fire Department.
- All rescue/recovery efforts are expected to be completed by Friday, May 5, at which time the site will be turned over to the FBI and restricted to investigative personnel only.
- The 54th Quartermaster Graves Registration Unit is released.
- All Mobile Emergency Response Support (MERS) personnel and equipment, except logistical support, are released by 2400 HRS.

WEDNESDAY, MAY 3, 1995:

- All rescue/recovery operations at the site are being conducted by Oklahoma City Fire Department, as the US&R Task Force from Orange County demobilizes. Prior to departure, the Orange County Team presents an orange tree and plaque to Oklahoma City officials.
- The Oklahoma Military Department completes its sifting mission at the Oklahoma County Sheriff's gun range.
- Governor Keating requests the inclusion of Public Assistance (i.e., infrastructure damages) in Presidential Major Disaster Declaration FEMA-1048-DR-OK.
- By late afternoon, applications for disaster assistance total 968. Temporary Housing checks issued to date total $408,696 and the Small Business Administration has distributed 496 loan applications.

THURSDAY, MAY 4, 1995:

- Recovery work continues at the site, conducted totally by Oklahoma City Fire Department. The General Services Administration (GSA) requests engineering

support to monitor the structure after the rescue/recovery mission is completed. Two structural engineers from the U.S. Army Corps of Engineers, Tulsa District, assume this mission and relieve engineers currently supporting the recovery operation.

- The American Red Cross Family Services, Health Services and Mental Health Divisions form a "compassion team", designed to contact families of the deceased and all others who were directly victimized by the disaster.

FRIDAY, MAY 5, 1995:

- At 0005 HRS the Oklahoma City Fire Department officially halts all recovery operations at the site. It is believed that three bodies remain in the rubble, but due to their perceived location, structural engineers feel that the safety factor is too great to pursue their recovery until after the implosion of the building.
- Rescue/recovery workers gather at the site for a memorial service, closed to the media.
- The FEMA Disaster Mortuary Team (DMORT) completes its mission for the State Medical Examiner's Office and is deactivated.
- Responsibility of the Family Assistance Center, at First Christian Church, is transferred to the Oklahoma Department of Mental Health and Substance Abuse Services. The center, through federal funding efforts, becomes "Project Heartland", a program designed to meet the long-term needs of victims. ("Project Heartland" eventually relocates to 5500 N. Western Ave., where it remains at the date of this report.)
- President Clinton approves the inclusion of Public Assistance in Major Disaster Declaration FEMA-1048-DR-OK.

SATURDAY, MAY 6, 1995:

- Training and demobilization of the FEMA Donations Team continues, with emphasis placed on returning donated goods to the original donor.
- Operations of the Defense Coordinating Office are transferred to Ft. Sill, Oklahoma.

SUNDAY, MAY 7, 1995:

- Recovery activities continue.

MONDAY, MAY 8, 1995:

- All Emergency Support Function (ESF) operations are transferred from the Disaster Field Office (DFO) to FEMA Region VI, in Denton, Texas.

- A consortium of 15 religious organizations is established, known as "Interfaith Disaster Recovery of Greater Oklahoma City", to better meet the needs of disaster victims.
- The Recovery Service Center reports 889 visitors, to date. Individual Assistance registrations total 1,242 and SBA reports 715 loan applications issued. The American Red Cross and the Individual and Family Grant Program are working together to meet the funeral/medical expense needs of victims.

TUESDAY, MAY 9, 1995:

- After conferring with state and local officials, the General Services Administration (GSA) determines the best way to raze the remains of the Murrah Building is by implosion. GSA proceeds to make arrangements, contracts and proposes a date for the pending event.
- A Federal Building Performance Team arrives in Oklahoma City to study the effects of the blast and make recommendations to mitigate damages from similar events. The team is comprised of representatives from FEMA, the U.S. Army Corps of Engineers, GSA, the American Society of Civil Engineers, the National Institute of Standards and Technology and support contractors. The team is briefed by GSA officials on the status of the structure, but access is prohibited, due to safety factors.
- The donations distribution site at the U.S. Post Office, northwest corner of N.W. 5th and Harvey Ave., is closed.
- A Public Assistance Applicants' Briefing is held at the Oklahoma Historical Society Auditorium to educate potential applicants on the intricacies of the federal-state program.

WEDNESDAY, MAY 10, 1995:

- Recovery activities continue.

THURSDAY, MAY 11, 1995:

- The Recovery Service Center reports 1,368 registrations and 1,205 visitors, to date. SBA has issued loan applications to 542 individuals and 243 businesses.

FRIDAY, MAY 12, 1995:

- GSA selects the bid of a Maryland-based demolition company to implode the Murrah Building. A date has yet to be announced.
- The FEMA Voluntary Agency Coordinator holds the first Unmet Needs Committee meeting with key members from the Voluntary Agencies Active in Disasters (VOAD) group. Within a few weeks the group of approximately 20 agencies and funds grows to more than 80. (The group is renamed the

Oklahoma City Bombing Disaster Resource Coordination Committee and continues to meet weekly. The committee is continuing to develop a long-term recovery network, in cooperation with the National Association of Social Workers, Oklahoma Chapter, to constantly address victim, survivor, family and disaster workers' long-term needs. Additionally, FEMA, working in conjunction with the Department of Justice, U.S. Attorney's Office, is continuing the long-term recovery process by identifying issues that could be resolved by federal assistance.)

- The Recovery Service Center reports 655 Disaster Housing applications issued to verification inspectors with 594 of the inspections completed and processed. Disaster Housing payments, to date, total $547,951.

SATURDAY, MAY 13, 1995:

- Recovery activities continue.

SUNDAY, MAY 14, 1995:

- Recovery activities continue.

MONDAY, MAY 15, 1995:

- FEMA representatives and Feed the Children volunteers assist Regency Tower residents with the packing and moving of personal property so reconstruction of the building can begin.
- A meeting, coordinated by the United Way of Oklahoma City, is held for families who had children at the Murrah Building day-care center. Individuals are encouraged to talk with FEMA and voluntary agency representatives about their immediate and long-term needs.

TUESDAY, MAY 16, 1995:

- It is determined that at the time of the explosion 260 units of the Regency Tower were occupied, 72 of which still need to be vacated prior to reconstruction. By close of business, only 15 units have items which have yet to be moved or are under contract to be moved.
- Due to decreased activity, representatives from the Oklahoma Department of Human Services, Oklahoma County and Feed the Children relocate from the Recovery Service Center to their appropriate headquarters. Arrangements are made with Feed the Children to provide transportation for Regency Tower victims from the Trade Winds and Central Plaza motels to the Recovery Service Center.

WEDNESDAY, MAY 17, 1995:

- Recovery activities continue.

THURSDAY, MAY 18, 1995:

- A Public Assistance meeting is held between ODCEM, FEMA and the Oklahoma City YMCA. The meeting is designed to determine eligibility of the non-profit organization, however, the YMCA reports it has accepted an insurance settlement and additional assistance is unnecessary.

FRIDAY, MAY 19, 1995:

- Disaster victims making application through FEMA's National Teleregistration Center are advised that, due to computer problems, no individual control numbers will be issued for three to five days. This creates a significant problem since voluntary agencies use the control number to identify duplication of benefits, etc. FEMA is working to correct the malfunction, but asks the voluntary agencies to proceed in their efforts without the control number.
- The Donations Management Team ceases operations at the DFO. Future inquiries/activities will be coordinated through United Way personnel, located at the Recovery Service Center.

SATURDAY, MAY 20, 1995:

- Recovery activities continue.

SUNDAY, MAY 21, 1995:

- Recovery activities continue.

MONDAY, MAY 22, 1995:

- Recovery activities continue.

TUESDAY, MAY 23, 1995:

- At 0702 HRS the remains of the Alfred P. Murrah Building are imploded. In the next few days, the bodies of the three remaining victims are located, precisely where they were believed to be. This brings the final death count to 168, including the Oklahoma City nurse who responded to the incident and was mortally wounded when struck in the head by a piece of debris.

The Oklahoma Department of Civil Emergency Management

After Action Report

Alfred P. Murrah Federal Building Bombing

19 April 1995 in Oklahoma City, Oklahoma

Operational Strengths

The operational strengths subsequent to the bombing of the Alfred P. Murrah Federal Building are presented herein under the headings: I. Major Reasons the Operation Ran Smoothly; and, II. Additional Strengths Observed. It should be noted that the response/recovery challenges faced during the Oklahoma City Bombing are unique to any disaster operation the United States has encountered, to date. It would be impossible to document every positive response/recovery effort performed during this tragedy, therefore, only a few, significant strengths are outlined. A strong point of emphasis should be noted when reviewing this section and the next, dealing with lessons learned. The response/recovery missions performed during the Oklahoma City Bombing will and should always be considered a "total success". The following observations are presented for consideration during future operations.

I. MAJOR REASONS THE OPERATION RAN SMOOTHLY

1. The disaster occurred in Oklahoma City, where there was a strong state and federal government presence.

2. The disaster occurred in a jurisdiction which possesses an abundance of emergency resources.

3. The intense search and rescue mission was limited to a relatively small, confined area.

4. Damages were limited to a mostly non-residential section of the city.

5. Cooperation between local, state and federal government was unparalleled.

6. Strong executive leadership and common concerns were displayed at all levels of government.

7. Every person involved in the response/recover operation possessed a personal interest in the event. All were victims.

8. "THE OKLAHOMA STANDARD" Simply defined, The Oklahoma Standard represents the greatest asset our state offers..."Our People"

II. ADDITIONAL STRENGTHS OBSERVED

- Unquestionable responsiveness, teamwork, and caring incurred on the part of all first responders.
- The American Red Cross and other voluntary organizations' response was immediate and continues to meet the needs of all those affected by the disaster.
- The National Weather Service (NWS) was instrumental in providing timely and accurate weather data to those overseeing the rescue/recovery effort. The three-hour, short-term weather forecasts should continue to be a standard, provided by NWS to the Incident Command Post, during any major emergency/disaster.
- Once the Multi-Agency Coordination Center (MACC) was established, a good exchange of information began to evolve between ODCEM Forward Operations Officers and the Tinker Air Force Base Fire Department, the Oklahoma National Guard, the Oklahoma City Public Works, the Oklahoma County Emergency Operations Center and their Emergency Management staff, the Oklahoma City Fire Department and the National Weather Service.
- Communication support from Cellular One, Southwestern Bell, et al, was superb.
- Unlike many of the agencies at the scene, the Oklahoma Highway Patrol could talk directly with personnel from Oklahoma-based federal agencies, including the Drug Enforcement Administration (DEA), FBI and the U.S. Marshal's Service. They have a pre-determined disaster plan in place, and part of that plan calls for the use of compatible radios and systems. A Department of Public Safety technician was able to program radios within 45 minutes. The Mobile Command Posts were indispensable for effective on-site communications. To coordinate communications among the multiple agencies, the Oklahoma Highway Patrol used their trunking capability to assign different sub-fleets for different functions to different public-safety agencies, if they were equipped with 800MHz trunking system radios.
- Oklahoma City provided adequate space and resources for the establishment of the two Multi-Agency Coordination Centers (MACCs).
- Many officials indicated that city, county, state and federal response procedures for this incident would become a model for the future. Urban Search and Rescue Task Force members commented regularly that they had never been

treated so well before, and that the care and compassion they received while here had become the standard -- **"The Oklahoma Standard"**

- Security procedures were quickly established to limit access to the Incident Command Post area, inner perimeter and outer perimeter.
- The Oklahoma City Police Department had an Emergency Response Team (ERT), established two years prior to the incident. They have trained monthly and added a new mobile command post to their cadre of response equipment.
- Forty-seven ambulance services, 103 ambulance units, and 384 emergency medical personnel participated in the bombing incident. Some units were already in Oklahoma City, transporting patients from their jurisdiction. Subsequently, they stayed to assist, once their patients were delivered to their appropriate destination. Other services were called in for mutual aid, to assist in or take care of the routine calls. Others were asked to provide back-up for communities, so that closer ambulances could respond, while others responded to the numerous media requests for assistance.
- A sophisticated piece of equipment used to search for survivors in the Murrah Building was the "Life Detector", a listening device used to locate a conscious person trapped under rubble. Search and rescue personnel would then use a bullhorn to instruct victims to tap rhythmically on a large piece of concrete or steel.
- Another piece of technology used in the Murrah Building was the "System To Locate Survivors" (STOLS), a specialized search camera system. Operators would wear a 21-pound monitor strapped to their chest to view images transmitted from a probe via a fiber-optic cable. The probe, which is two inches in diameter and carries a camera and microphone on the end, can be extended up to 79 inches into a structure through bored holes or cracks. The camera can be articulated to allow for up to a 180-degree view. The operators wore headphones to enable them to hear inside the crevice.
- The immediate response by Oklahoma City's fire, police and emergency medical personnel and other area fire, police and emergency medical personnel was phenomenal. Personnel and apparatus appeared at a moment's notice, willing to do whatever it took and work as long as it took to achieve the search and rescue mission.
- The Oklahoma City Bombing should be viewed as ultimate proof that the Incident Command System works.
- Operational strengths exhibited by ODCEM include the following:

  1) Operational personnel responded to the site and made contact with the IC within the first 30 minutes.

  2) The SEOC was fully operational with liaison officers in-place within the first hour.

3) Back-up communications were in-place and utilized to make initial contact with FEMA.

4) Personnel recall was immediate and 24-hour operations were maintained by a full-time staff of 25 for the next 17 days.

5) Volunteer resources were established prior to the bombing and utilized to supplement manpower capabilities for the duration of the operation.

6) Briefing reports were provided to the Governor at the beginning of each day, outlining the previous 24-hours' developments.

7) State personnel exhibited operational flexibility necessary to accommodate Oklahoma City with State resources and to request federal resources, in this unique disaster situation.

The Oklahoma Department of Civil Emergency Management

After Action Report

Alfred P. Murrah Federal Building Bombing

19 April 1995 in Oklahoma City, Oklahoma

Lessons Learned

The lessons learned subsequent to the bombing of the Alfred P. Murrah Federal Building are presented herein under the headings: I. Major Lessons Learned; II. Lessons Learned through Response/Recovery Operations; and, III. Lessons Learned from Other Agencies. A strong point of emphasis is necessary when reviewing the information contained herein. Regardless of whether all operations followed current emergency management doctrine, the response phase of this emergency was performed in a most professional, positive, caring, and safe manner. The following observations are presented for consideration during future operations.

I. MAJOR LESSONS LEARNED

1. The "Heartland" of America is no longer isolated from the reaction of political action groups of either the extreme left or right.

2. The Integrated Emergency Management System (IEMS) works best when all functions are in place.

3. The Federal Response Plan needs to be modified to incorporate the response activities and missions of Federal Law Enforcement Agencies.

4. State and local plans and exercises need to be changed to incorporate response forces working in and around a large crime scene.

5. State and local plans should mirror the Federal and Regional Response Plans with additional emergency support functions added to fit the State and local situation.

6. A need exists for National and Regional integrated training between Federal, State and local emergency management, fire and law enforcement services.

7. A Federal, State and local cooperative partnership is essential for successful response and recovery operations following a catastrophic disaster.

II. LESSONS LEARNED THROUGH RESPONSE/RECOVERY OPERATIONS

(Lessons learned under this heading will be addressed under the appropriate Emergency Support Function (ESF), as outlined by the Federal Response Plan.)

A. ESF #1 - TRANSPORTATION

Issues covered under "Lessons Learned from other Agencies"

B. ESF #2 - COMMUNICATIONS

Statement of Issue 1: *Due to the initial chaos following the explosion and non-emergency services transmissions, communications capabilities from the disaster site and between response agencies were limited at best.*

Discussion: During the first 12 to 18 hours after the incident, standard and cellular phone circuits were overloaded, making it extremely difficult to communicate by telephone. Portable/mobile cellular sites were erected near the incident site to ease the stress on cellular circuits. This action in itself made it

much easier to seize a circuit, greatly enhancing cellular communications. However, other non-emergency communications traffic tied up standard phone lines making coordination efforts difficult at best. During the first few critical hours following the explosion, two-way radio proved to be the fastest and most efficient way to relay information back to dispatchers and request specific support.

Additionally, Oklahoma City Police Department indicated that they switched much of their communications to a common police channel, enabling them to better communicate with their personnel. This achieved a significant improvement with their internal operations; however, it left them isolated and unable to communicate and/or monitor activities of other responding law enforcement units or response agencies.

Cellular One (now known as AT&T Wireless Services) served as the catalyst for creation of the Oklahoma Disaster Preparedness Council in 1994. This council included top-level management and operations personnel from departments of municipal governments in the metropolitan area; Oklahoma County, State and Federal agencies, hospitals, and the media. Through the council, a directory of cellular telephone numbers of key personnel and facilities was created. Immediately after the bombing, Cellular One reconfigured their trunking system to provide priority service to those numbers listed in the directory.

Recommendations: Emergency plans should be reviewed and Agency Standard Operating Procedures (SOPs) should be developed to provide for an effective communications system when responding to a catastrophic event of this nature. The activities of the Oklahoma Disaster Preparedness Council should be enhanced and expanded to other communities/agencies serviced by AT&T Wireless. Similar efforts should be initiated with other cellular telephone companies.

Statement of Issue 2: *Even though the SEOC provides adequate communications capabilities for most disasters experienced within the state, and the MACC was established to provide adequate capabilities for this event, logistics for transmissions (via telephone, radio or FAX machine) sometimes led to confusion and delays on action in each operations center.*

Discussion:

At the MACC - There were numerous telephones in the Multi-Agency Coordination Center (MACC). This being the case, when a phone would ring, everyone would check to determine if it was their phone which was ringing. Additionally, a "ring-down" telephone connected directly to the State EOC was

not always available to forward operations staff. This was asked for each time the forward element relocated, however, such a system was only installed when operations moved to the City EOC. It should be noted that a ring-down phone was already located at the City EOC and was repositioned to the operations area by the City Communications Officer.

At the SEOC - Pagers and cellular telephones do not work inside the State EOC. Antiquated communications equipment was unable to make immediate frequency changes for all of the influx of agencies involved. SEOC computer equipment was extremely slow and no computers were dedicated solely for the purpose of logging message traffic. There were also no electronic status boards.

Recommendations: A "ring-down" phone should be made available to ODCEM staff wherever forward operations is located and visual notification devices should be placed on each phone and FAX machine in the SEOC to limit confusion and potential delays in action. Electronic status boards should be installed in the SEOC along with a passive antenna system which would allow pager and cellular phone use. As for computers and other communications equipment, short and long-term upgrade plans need to be established, including the need for dedicated computers for the purpose of message-logging, donated goods, etc.

C. ESF #3 - PUBLIC WORKS AND ENGINEERING

Issues covered under "Lessons Learned from other Agencies"

D. ESF #4 - FIREFIGHTING

The State did not have a firefighting mission in this event. Search and rescue operations were conducted locally and supplemented federally. Lessons learned on this activity should be covered by each level's After Action Report.

E. ESF #5 - INFORMATION AND PLANNING

(Command and operational issues will also be covered under this ESF)

Statement of Issue 1: *The Integrated Emergency Management System (IEMS) and Incident Command System (ICS) were weakened early in the event due to the immediate response of numerous local, state and federal agencies, three separate locations of the Incident Command Post (ICP), within the first few hours, and the deployment of many Mobile Command Posts (MCPs), representing support agencies.*

Discussion: At the Incident Command Post (ICP), there were a minimum of seven (7) Mobile Command Posts (MCPs), representing various agencies, coordinating numerous support functions. While the search and rescue mission was always under the command of Oklahoma City Fire Department, the many MCPs produced fragmented information from which decisions could be made and actions tracked. This situation also led to confusion between agencies and

in some cases caused delayed action due to multiple chains through which a request was made. Additionally, any officials visiting the ICP had to check with a minimum of four MCPs to obtain the overall scope of the situation.

Recommendations: In reality, there was only one ICP at the Southwestern Bell Telephone parking lot, the post manned by the Oklahoma City Fire Department. Every other Mobile Command Post served simply as a forward operations unit for the agency which it represented. For the Integrated Emergency Management System to function properly, the following process needs to be adhered to:

1) The ICP is established immediately at an appropriate location with the Incident Commander (IC), representing local government*, identified;

* The term "Local Government" includes both City and County

2) All resources necessary to support the mission should be requested from the IC to the Local Emergency Operations or Coordination Center;

3) Resources requested which the local government cannot accommodate should be directed to the state, through the State Emergency Operations Center; and,

4) Resources requested which the state government cannot accommodate should be directed to the federal government, through the FEMA Regional Operations Center or the Disaster Field Office, if one is established.

Even though much has been stated concerning the unique response each level of government was forced to take in this event, the fact remains that Oklahoma City was in charge of the search and rescue mission from the time the bomb exploded until they deemed the mission completed. Therefore, there is no reason the IEMS process, detailed above, could not have been implemented.

Statement of Issue 2: *A general lack of knowledge by key individuals and agencies, concerning IEMS, disaster response/recovery planning and implementation, and emergency management functions in general, led to confusion and frustration among responding agencies at all levels of government.*

Discussion: There were some local, state and federal officials who did not have a clear understanding of the terms "emergency" or "disaster", nor the knowledge of the existence of a State or Federal Emergency Operations Plan. Many calls were placed to various state and federal agencies without the

necessary coordination. This slowed the responsiveness of these support organizations, since they had to back-track to conduct the required coordination consistent with established law.

Recommendations: When implemented at all levels of government, the Integrated Emergency Management System (IEMS), just as the Incident Command System (ICS), has been proven effective on numerous occasions, nationwide. However, the key to success of this system, or any system, is commitment by all levels of government. This can only be established through constant disaster planning, training and exercising. Oklahoma City does not currently agree with the IEMS, nor did they at the time of the bombing. While this is a local government prerogative, problems with future disaster situations will continue to arise when state and federal support are required.

Statement of Issue 3: *The establishment of the Multi-Agency Coordination Center (MACC) was necessary, given the circumstances concerning the response efforts following the Oklahoma City bombing. However, the MACC's function carried two separate definitions, depending solely on who you talked to. It was either: 1. A center where all appropriate agencies from all levels of government should relocate to provide coordination actions and expertise; or, 2. An Oklahoma City Emergency Operations Center where all city resources and information could be coordinated.*

Discussion: Since ODCEM utilized definition #2 in its activities, the following discussion points are to be taken with this fact in mind. The points are as follows:

1) When Oklahoma City decided to consolidate response support actions, city officials delegated implementation authority for the integrated emergency management system to FEMA Headquarters personnel. The city is not a funded Emergency Management Assistance (EMA) jurisdiction. The city's full-time Emergency Management Director position had been vacant for approximately 10 months prior to this incident. The city has a federally-funded EOC, however, it was converted to a 9-1-1 dispatch center several years ago, and city officials do not appear to have a clear understanding of the integrated emergency management system and the role of an EOC as a coordination center.

2) When Oklahoma City decided to consolidate response support actions, city officials refused to use the term EOC. Rather, the term Multi-Agency Coordination Center (MACC) was used. This caused some confusion at all levels relative to the terminology. In every respect, the MACC was an operational city EOC, augmented by federal and state personnel. Response coordination and exchange of information improved significantly when the

MACC was activated. However, the city should have been prepared to activate a coordination center earlier than it did. As a special note, city officials were not familiar with the role of the Disaster Field Office (DFO). City officials initially thought that DFO operations could be consolidated into the MACC, verses consolidating operations at a City EOC, State EOC and the DFO.

3) The ODCEM forward operations element moved from the State EOC to the Incident Command area, to the Multi-Agency Coordination Center (MACC), at the Myriad Convention Center, to the MACC, at the City 9-1-1 Center, and finally to the Fire Department Logistics area, where it was deactivated. Special note - There was also a DFO representative at the Fire Department Logistics Center during the same time in which ODCEM forward operations personnel were present. Based upon the circumstances, the city should have activated a coordination center within the first 24 hours of the incident, in one location, with the same phone numbers (not constantly changing), with city counterparts assigned as applicable, so that information and resource coordination could have been more stable and responsive.

4) City officials depended on FEMA representatives completely for MACC communications set-up and all automation support, i.e., FAX machines, computers, software, modems, copy machines, telephones, and telephone service. When the decision was made to consolidate response support activities, city officials indicated that necessary manpower, resources, experience and time were not available to perform this function. An Integrated Emergency Operations Plan (EOP) and an established coordination center would have solved this problem.

Recommendations: Planning, training and exercising are the only feasible recommendations. If an integrated emergency management system is to be utilized and effective in future disasters, all levels of government must be on the same page of the book. Effective coordination cannot be achieved during the chaos following any disaster. Relationships must be established, plans written and tested, and procedures agreed upon. It is the responsibility of each level of government to see that these goals are met. Regardless of what our particular role is, our mission is the same..."to provide effective response and recovery through coordinated logistics, communications and information support systems".

Statement of Issue 4: *While ODCEM's plans and Standard Operating Procedures (SOPs) are designed to meet "all hazards", the department's quantitative resources, such as manpower and equipment, have been developed to manage the state's common disasters, i.e., flooding, tornadoes, severe storms. From the Murrah Building Bombing emerged numerous internal*

limitations and deficiencies, in both the logistics and operational categories. Each is detailed in the following discussion points.

Discussion:

1) Initially, ODCEM Forward Operations did not have a fixed location from which to work. To enhance coordination responsiveness, it would be beneficial to expedite securing a fixed location for State Operations Officers to operate from. For this event, Forward EOC operations could have been located with the Department of Public Safety or the Oklahoma National Guard Mobile Command Posts, or preferably from a local Emergency Operations Center, if one had been established.

2) There were some problems coordinating information within the State EOC and State Forward Operations. Some State EOC personnel do not understand or realize how critical a responsive and accurate exchange of operational information is between forward operational personnel and the State EOC. Normal day-to-day operational procedures need to be reviewed and revised/changed when responding to emergency/disaster operations.

3) There was not enough state staff trained and familiar with State EOC operations/coordination procedures.

4) Due to the long-term commitment, many state agencies did not have a sufficient number of additional personnel trained in EOC Operations. While most agencies are adequately represented through the second or third liaison level, the length of this operation required personnel from the forth, fifth or sixth tier. This incident was the first time the SEOC was activated longer than five days.

5) ODCEM personnel were overtaxed during this lengthy, 24-hour operation. This was further complicated when manpower was required to staff the forward element, the Disaster Field Office, and the Recovery Service Center.

6) The State EOC Operations Room (Bullpen) is not large enough to accommodate state staff and all of the agency liaison officers during an extended disaster operation.

7) During the first three days of the operation, fatality figures were obtained from the Incident Command Post. The Oklahoma City Fire Department quickly developed a body count procedure in which they would only "count a body" once it was actually removed from the incident structure. This was very helpful in ensuring that an accurate account was consistently maintained. Subsequent to an internal discussion, the Chief of Operations at the State Emergency

Operations Center, began to coordinate directly with the State Medical Examiner's Office to access this information.

8) As hospitals received injured victims from the bombing, accountability was superior, however, establishing a single clearinghouse for all casualty/injury/treatment reports to be FAX'd would have be extremely helpful.

9) The SEOC was omitted from the information loop, concerning donations management. Consequently, state personnel did not have ready access to knowledge of what donations/services were available, which could fill needs as they occurred.

Recommendations: Plans and procedures must be reviewed and updated to avoid these operational problems in the future. While it would be nice to solve manpower and equipment limitations, based on the needs of this disaster, fiscal responsibility must guide us to the more common event. However, these deficiencies can be mitigated by the development of a trained reservist staff and continued identification of resources needed to support this department. Additionally, the state needs a full-time Voluntary Agency Coordinator and donations management staff.

F. ESF #6 - MASS CARE

Issues covered under "Lessons Learned from other Agencies"

G. ESF #7 - RESOURCE SUPPORT

Statement of Issue 1: *During normal disaster operations, resources are defined as "manpower and equipment which can be obtained through governmental levels or purchased and/or leased from private industry, necessary to accommodate the needs of the disaster situation". Donated goods, on the other hand, are generally thought of as food, clothing, assorted goods and volunteers which arrive unsolicited, for the purpose of accommodating the needs of the individual victims. However, following the bombing, these generic definitions did not apply. There were literally thousands of items, ranging from specialized search and rescue equipment to hard-hats, which appeared in Oklahoma City from around the world. Needless to say, numerous problems were experienced with the management and storage of these resources/donated goods. These problems are further detailed in the following discussion points.*

Discussion:

1) Oklahoma City had no method of identifying resources or managing the staging area, on 8th Street or along Robinson Ave., during the first two days of the event. They did not appear to have the manpower nor an individual or city department, identified in advance to handle this problem. Property accountability at the staging areas and donated goods accountability were

virtually non-existent during the major portion of the incident. City officials indicated that necessary manpower, experience and time were not available to conduct these operations. City officials asked FEMA personnel to perform these duties. Implementation of an effective Donations Management Program is imperative at the state and local level.

2) In-kind donations management was non-existent during the initial days of this incident. In a catastrophic incident of this proportion, the local jurisdiction should establish an in-kind donations management team and assign a liaison to the local Emergency Operations Center (EOC) for the purpose of locating and arranging for the delivery of critical need assets.

3) No instrument currently exists that will identify when a requested resource arrives at its intended location.

4) Throughout this event, there were numerous problems with resources not being available at the appropriate place and time of need. Subsequent events of this magnitude should consider establishing a more centralized warehousing system for storing in-kind donations, in order to more effectively manage the proper

5) Supplies and equipment were being requested on a short notice basis by both the Oklahoma City Fire Department Logistics Center and the State Medical Examiner's Office, with apparently little or no planning for future needs. Respective supervisors should consider long-term plans and request necessary supplies and/or equipment 72 hours in advance, if possible.

6) Local, state and federal emergency management agencies need to consider developing an initial individual equipment issue system for emergencies of this magnitude. Several items of individual equipment, needed by search and rescue personnel, might include: steel-toed work boots, heavy protective clothing, such as military Battle Dress Uniforms (BDUs), gloves, hard hats, face protection, respirators with high efficiency particulate filters (HEPA), saranex-coated TYVEK protective clothing, long underwear, back supports, and protective eyewear.

Recommendations: A State Donations Management Plan/Annex must be developed and incorporated into the SEOP. Additionally, once said plan is completed, it must be distributed as guidance for local government's development of their own plan.

H. ESF #8 - HEALTH AND MEDICAL

Issues covered under "Lessons Learned from other Agencies".

I. ESF #9 - URBAN SEARCH AND RESCUE

The State does not have a trained and equipped Urban Search and Rescue Task Force, available for state missions. Search and rescue operations were conducted locally and supplemented federally. Lessons learned on this activity should be covered by each level's After Action Report.

J. ESF #10 - HAZARDOUS MATERIALS

Issues covered under "Lessons Learned from other Agencies".

K. ESF #11 - FOOD

Issues covered under "Lessons Learned from other Agencies".

L. ESF #12 - ENERGY

Not Applicable to this report.

M. SUPPORT ANNEXES

1) PUBLIC INFORMATION

A. Lessons Learned Concerning Public Information

The present Public Information Officer (PIO) for ODCEM worked for FEMA during the Oklahoma City Bombing disaster. For the event, he served FEMA as Lead PIO and Joint Information Center (JIC) Coordinator. He worked at the ICP, MACC and DFO and currently chairs the Public Information Subcommittee of the Oklahoma City Bombing Disaster Resource Coordination Committee (RCC), the group designed to address all the long-term recovery needs of the disaster's victims. With his knowledge of both federal and state public information operations during the incident, it's relevant to include his observations in this report. They should be beneficial to other public information specialists who will be similarly tasked in future events.

The City of Oklahoma City Public Information Office, at the request of the Federal Bureau of Investigation (FBI), established a daily formal briefing event on the afternoon of April 19. From the first meeting, these daily briefings set the tone for interagency cooperation and dissemination of information to the public through the media.

On the evening of April 19, the Public Information Officer for the Oklahoma City Fire Department established two daily briefings at the media area near the Murrah Federal Building, to provide the latest information on the rescue and recovery operations. On Thursday, April 20, the Operations Coordinator for the State Medical Examiner's Office established a briefing twice daily to provide information about the processing and identification of victims, after families had been notified.

The effectiveness of the effort was continually measured by the media reports about the incident and response. Each level of government had a forum to address the media. The Governor provided information about state support, the Mayor discussed issues of concern and needs of the city, the Incident

Commander and Fire Department Public Information Officer provided information about search and rescue efforts, the Chief of Police provided an overview of city law enforcement procedures inside and outside the control area, the FBI updated the investigation progress for federal law enforcement, FEMA covered federal operations and the State Medical Examiner provided information on their work to process and identify the remains of those persons being recovered from the site.

What follows are public information issues encountered during this disaster and recommended actions and implementation.

Issue 1: *Joint Information Center Operations*

Discussion: Media coverage was intense from the first hour of the disaster. Efforts to find information were imperative for every news organization, including local, national and international sources. Further complicating the situation was the constant coverage by the local, national and international media. Local media outlets were being carried, live and exclusively, by their networks for the first day. Local media accepted unconfirmed requests for donations, calls for additional volunteers and trained personnel and broadcast them as they came in. This kind of media coverage brought hundreds of spontaneous volunteers and donations.

Although the disaster was confined to a relatively small area in downtown Oklahoma City, the various federal, state, local and volunteer agencies had much to do during the response and recovery phases of the disaster. The opportunity for their public information officers to coordinate information was difficult, because of the variety of locations established for coordinating efforts.

The State Emergency Operations Plan calls for establishment of an effective procedure for a continuous flow of emergency information emanating from the State Emergency Operations Center (SEOC), when emergency events occur, or from other state agencies in connection with their respective emergency missions. Provisions for on-site information coordination to support local officials, through establishment of a Joint Information System (JIS) for information sharing, and a Joint Information Center (JIC), as a source for information, was not in the plan.

On the morning of April 23, a Joint Information Center (JIC) was established, at the request of Oklahoma City, in the Multi-Agency Coordination Center, inside the Myriad Convention Center. The JIC monitored both print and broadcast media, disseminated information to the media, answered media inquiries and assisted officials in scheduling broadcast media and print media interviews.

Members of the JIC staff accompanied the local, state and federal officials at events during the response and recovery effort. Personnel assigned to the JIC included representatives from Oklahoma City and Oklahoma County, as well as the State and Federal Public Information Officers. Although not physically located in the JIC, but as a part of the Joint Information System (JIS), coordination was established and maintained with local or regional offices of the U.S. Attorney, Department of Justice, Small Business Administration, Federal Bureau of Investigation, Bureau of Alcohol, Tobacco and Firearms, Social Security Administration, General Services Administration, the Federal Executive Board, the Governor's Press Office, the State Department of Insurance, State Department of Mental Health, Department of Human Services, Highway Patrol, State Bureau of Investigation, State Medical Examiner's Office, Red Cross, United Way and Feed the Children.

The success of the Joint Information Center (JIC) was in establishing a Joint Information System (JIS), providing phone and pager contact with all information sources, and making a constant effort to keep everyone informed on developing situations, internal and external problems and opportunities, so that media questions and public inquiries could be referred to the appropriate source for answers.

Recommendations: The State Emergency Operations Plan needs to be updated. Plans should call for immediately establishing a state and local Joint Information System, as soon as possible. An inquiry of local officials should be done to ascertain their need and interest in setting-up an on-site Joint Information Center.

Whenever possible, a representative from each entity involved with a disaster (local, state, federal, volunteer and private sector) should be represented in the JIC. If this is not possible, it is recommended that radio communications, cellular phones and digital pagers should be acquired and provided for each agency's key media contact. This has proven to be the only way to successfully coordinate information during media-intensive disaster scenarios.

Issue 2: *News releases and dissemination to the media.*

Discussion: News releases should be kept to a minimum in any emergency and in a one-page, easy-to-read format. In this disaster, with so much day-to-day contact with the media, when a release was sent, in many cases the media used precisely what had been issued because of its simplicity. FEMA supported the dissemination effort through the use of the computer-based FAX system at their headquarters. This provided an efficient method of distribution of news releases during the early days of operation. Although some of their list needed to be updated because of FAX phone number changes for a few of the media outlets,

being able to target local area media with an Oklahoma-specific group on area-specific releases contributed to the success with the media.

Recommendations: Continue to keep news releases to a minimum, include all concerned agencies in their distribution and use the a computer-based FAX system during the first few media-intensive weeks. After initial media attention has subsided, it is suggested that a local area FAX group be established on a FAX machine in the JIC, that will get the word to those who need it, rather than a wide area distribution for outlets who are no longer following the story.

Issue 3: *PIO knowledge, skills and abilities in an overwhelming media response disaster.*

Discussion: The State PIO was not included in decisions made by the Federal Lead PIO and the JIC Coordinator, regarding deployment of PIO's and technical specialists for this disaster. Despite repeated requests for additional personnel, the JIC was short-handed during this disaster.

Recommendations: Lists of specialists, available for a disaster, need to be provided to the State and Federal Lead Public Affairs Officers and the JIC Coordinator, listing PIO abilities or specialties to aid the federal-state team.

It is recommended that a cadre of state-trained public information volunteers and reservists be developed to support the Oklahoma Department of Civil Emergency Management on future disasters. This would allow representation at the State Emergency Operations Center and the Joint Information Center, as well as in field situations where necessary.

Issue 4: *Media monitoring, photo and video documentation functions and staffing in a media-intensive, mass-fatalities disaster.*

Discussion: Photo and video documentation during a disaster are important for several reasons, but were especially important during this media-intensive, mass-fatalities incident. With a shortage of equipment and personnel, early in this disaster, the Federal-State PIO team was unable to record media coverage during the first week.

Media analysis was also difficult, because of the overwhelming amount of coverage.

Photo/video documentation was difficult, because of limited personnel and the wide variety of activities being conducted to support this disaster. The assistance of two local emergency management volunteers was invaluable for this function.

Recommendations: At the local, state and federal level, efforts should be made to recruit technically qualified people available for a JIC, to cover all the work-intensive aspects of a disaster where there is a major demand for both photo and video documentation and media monitoring/analysis. Having appropriate equipment available at the State EOC, and on scene, as quickly as possible, is also important to the media monitoring and photo and video documentation effort.

Issue 5: *Job-related stress in a media-intensive JIC operation.*

Discussion: During the course of working any disaster, people often let stress build up to the point of being overwhelmed. In this work-intensive, mass-fatalities response and recovery operation, the entire staff showed constant care and concern for each other, in an effort to ensure each employee was able to deal with the situation.

Recommendations: Employees should be provided the opportunity to attend at least one Critical Incident Stress Debriefing (CISD) session during, or immediately following any disaster, especially in a mass fatalities incident. The CISD session provides the employee with a better understanding of how to vent any anger, frustration and/or confusion they are feeling. They can also be shown healthy ways to deal with the stress during these sessions. This is especially important during a media-intensive JIC operation where mass fatalities and injuries consume the media coverage and there is a constant request for information about the casualties and rescue operations.

III. LESSONS LEARNED FROM OTHER AGENCIES

Numerous agencies from all levels of government and the voluntary agency sector responded to the Murrah Building Bombing. In the summer of 1995, ODCEM requested all state agencies and voluntary organizations we had dealings with to provide After Action Reports, emphasizing "lessons learned". The following agencies responded to the request. Each agency's mission/activities, pursuant to the disaster, is provided, as well as recommendations they feel need consideration prior to another similar event.

A. American Red Cross

Mission/Activities: The response of the American Red Cross was immediate and sustaining. Disaster Action Team members, from the Oklahoma County Chapter, arrived on the scene within five minutes of the explosion to assist with rescue operations, first aid, mass care and triage. Shortly afterwards, four Red Cross Emergency Response

Vehicles arrived on the scene, providing food and drinks for victims and rescue workers.

Later the first day, Red Cross volunteers opened a Logistics Center in the garage of Southwestern Bell Telephone's Corporate Headquarters. The chapter was immediately staffed by employees and volunteers who began operations in mass care, disaster welfare inquiry, damage assessment, mental health and health services, logistics and communications. Red Cross Government Liaisons staffed the State Emergency Operations Center and the Multi-Agency Coordination Center, to enhance communications between government agencies and their organization.

The Oklahoma County Chapter received numerous Disaster Welfare Inquiries from immediate family members, locally and across the nation. Inquiries were accepted from immediate family members. Thirty (30) hours into the incident, Red Cross Disaster Welfare Inquiry staff accurately reported 711 victims accounted for and 167 missing. This information was provided to the State Medical Examiner's Office to assist in the identification process. Close coordination with the Medical Examiner's Office continued for the next 21 days.

Experienced disaster workers, from across the nation, quickly arrived to begin extended operations. The chapter was used as a congregation facility for parents of missing children and for FBI operations. Twenty-two hundred (2,200) volunteers registered with the Red Cross in one day.

A shelter was established at St. Luke's Methodist Church and continued operations for 10 days, following the incident. A Service Center was established at Shepherd Mall, near the FEMA/State Recovery Service Center, and at the Trade Winds Motel, where most tenants of the Regency Tower apartment building were temporarily housed.

Red Cross Disaster Mental Health workers assisted in staffing the State Medical Examiner's Family Assistance Center (a.k.a. The Compassion Center) at First Christian Church, where family members of victims received notification, information and counseling. Red Cross Family Services, Health Services and Mental Health Services developed a unique "compassion team", whose focus was to reach all families of the deceased, and victims who had been hospitalized or experienced other medical problems. A recovery project was established at Shepherd Mall to assist victims and their families with long-term unmet needs.

Red Cross Logistics established a warehouse at a Coca-Cola plant, where large quantities of donated goods could be staged.

At the close of the response, over 6,800 volunteers had worked on the job with over 9,600 spontaneous volunteers having registered.

Lessons Learned/Recommendations:

Communications - The communications problems experienced by many of the rescue/relief agencies were also experienced by the Red Cross. Cellular phone service was overloaded soon after the bombing. The Red Cross hand-held radios were also inoperative. The only communications we had on the scene was the low-band VHF, located in our emergency response vehicle. This severely limited the mobility of incident command on the scene. A proposal has been submitted to upgrade our hand-held radios, but limited chapter funding at this time has postponed this acquisition.

Lengthy Chain-of-Command - The Red Cross assistance efforts were carried out in a wide variety of venues and locations. The many logistics sites, mass care feeding sites and service delivery locations provided a challenge for command, control and communications. This challenge occurred early on when needs were being met through non-traditional service areas, especially in logistics. We resolved this challenge by staffing supervisory personnel at the site and at the service delivery areas. These people met daily with the headquarters staff so communication and job problems could be handled more efficiently.

Unauthorized Personnel Registration - The Red Cross was overwhelmed by the magnitude of spontaneous volunteers who came to the chapter to help. This tremendous response led to volunteers who were quickly assigned jobs, but were not properly registered nor properly identified. Our Local Disaster Volunteer (LDV) Coordinator quickly regained control of the situation by working with the FBI and requiring that only the LDV Coordinator's signature on their I.D. would be valid. This procedure was quite time-consuming, but necessary in working with the FBI. Since the site was a crime scene, all our volunteers were required to be critically screened before they could work at the bomb site. Our plan for the next major disaster will be to issue temporary I.D.s early in the disaster with an expiration date three days into the disaster. These temporary I.D.s would be color- coded and easily recognizable. Those volunteers who continue to work on the job would then be issued a permanent/valid I.D. for the remaining time.

B. The National Weather Service

Mission/Activities: Several rounds of potentially severe weather, with high winds and frequent cloud-to-ground lightening, provided times where safety of search and rescue teams was threatened. The National Weather Service, Norman Center, provided continuous watch on these events and good lead time on warnings.

Lessons Learned/Recommendations: The ability to provide graphic information, via computer, on-site was not up to our expectations. We envision developing some type of weather package we can take on-site to provide more information at the scene.

C. The Oklahoma Board of Medicolegal Investigations (The Office of the State Medical Examiner)

Mission/Activities: The mission of the agency was to recover and identify the dead, assist the fatalities' families, determine the cause and manner of death, and to collect and identify evidence.

Major activities under this mission included:

1) Documentation, extraction and transportation of each fatality from the Murrah Building to the main morgue;

2) Collection and identification of human remains for the purpose of matching each to the appropriate fatality; and,

3) Establishing the Family Assistance Center, to provide current information to family members and notify family members when a victim had been recovered and identified.

Lessons Learned/Recommendations: Increased emphasis must be placed on documentation. Early in an event of this magnitude, a "scribe" or personal secretary should be assigned to each key personnel.

Personnel should be dedicated to track work hours and activities of all department staff at each represented location.

D. The Oklahoma Department of Corrections

Mission/Activities: Corrections Officers provided support in primary perimeter security.

Lessons Learned/Recommendations: None Submitted

E. The Oklahoma Department of Education

Mission/Activities: Coordinated counseling services provided to area students affected by the bombing.

Lessons Learned/Recommendations: None Submitted

F. The Oklahoma Health Department

Mission/Activities: Provided nursing and immunization support throughout the duration of the event. Provided 24-hour liaison staff for operations at the SEOC.

Lessons Learned/Recommendations:

1) Communications weakness with site;

2) Coordination of medical support at site was lacking;

3) There was no clearly defined point or location for patient regulation;

4) Several dispensaries were established by different groups in the area, but there did not seem to be any communication or coordination between each;

5) Many volunteers and groups of volunteers called, but there was no specific number or location where they could be referred;

6) Some volunteers traveled considerable distances, only to find out their services were not needed;

7) There were so many groups providing free food that storage and distribution became a problem;

8) Although data collection began immediately after the bombing, it was difficult for some hospitals to identify all patients related to the incident; and,

9) There should be a central location where requested items can be obtained, therefore inhibiting the need to request items which are already in supply.

G. The Oklahoma Department of Human Services

Mission/Activities: Provided personnel to staff both the SEOC and Disaster Field Office. Provided caseworkers and counselors for individuals affected and represented the state on the Federal Donations

Coordination Team. Administered the Individual and Family Grant Program at the Recovery Service Center.

Lessons Learned/Recommendations:

1) There is a need for additional planning and preparation of DHS field staff in responding to disasters; and,

2) The management of donations was an overwhelming task which would be improved in the future by implementation of the FEMA Donations Management System.

H. The Oklahoma Department of Mental Health and Substance Abuse Services

Mission/Activities: Nurses and physicians were deployed to local hospitals immediately following the bombing. Psychiatrists and psychologists assisted in death notifications at the Family Assistance Center. One staff member was detailed to the FEMA/State Disaster Field Office. Two youth center employees were detailed to the Recovery Service Center. Five of the clinical staff were assigned to Project Heartland. One staff member was detailed to coordinate all disaster-related activities, while a number of employees volunteered to staff the 24-hour Crisis Hotline. The Oklahoma Department of Mental Health and Substance Abuse Services established Project Heartland, and provided debriefing services to victims, family members, businesses and rescue workers. The department also coordinated mental health crisis response with FEMA and the Public Health Service. Additionally, we have established a strategic planning group which advises on service priorities, training needs and community awareness programs. Five community mental health centers, within central Oklahoma, conducted group debriefings for various agencies. The five centers established mobile outreach teams to provide debriefings and other needed crisis services. In conjunction with the Department of Human Services - Aging Service Division, counseling for older adults in nursing homes, assisted living centers and senior nutrition centers was provided. The Red Rock Community Mental Health Center took the lead in coordinating the establishment of support groups throughout central Oklahoma.

Lessons Learned/Recommendations: There needs to be more interaction/planning efforts between the Oklahoma Department of Civil Emergency Management and the Oklahoma Department of Mental Health and Substance Abuse Services, concerning crisis mental health services in disaster situations.

I. The Oklahoma Insurance Commission

Mission/Activities: Worked directly with insurance companies to assure that any and all claims were handled in a quick and efficient manner. This included removal of the normal time restraints involved in claim settlement, providing temporary licenses to adjustors who needed to assess various losses, and providing assistance at a central location.

Lessons Learned/Recommendations: It appeared to take a few days for individual victims to receive the word that the Recovery Service Center had been opened.

J. The Oklahoma National Guard (ONG)

Mission Activities: Though the Oklahoma National Guard participated in many missions throughout the event, their major missions can be outlined as follows:

1) Perimeter security around the Murrah Building;

2) Security of the State Medical Examiner's Office;

3) Provided equipment and manpower as tasked by ODCEM;

4) Provided Medical Specialist assistance to the Medical Examiner's Office;

5) Helicopter support for the U.S. Marshals Service;

6) Provided "Reaction Team" for security missions;

7) Helicopter support to transport bomb-detecting equipment from Tulsa;

8) Provided casualty assistance; and,

9) Provided manpower to comb debris for evidence, in support of the FBI.

Lessons Learned/Recommendations: Lessons learned from the operation, as provided by ONG, are detailed as follows:

1) Internal command and control problems at two different Operation Centers;

2) Identification Badge requirement and process took too much time;

3) Too many Operations Centers;

4) ONG representatives at the SEOC lacked knowledge of the system;

5) No State Soldier's and Sailor's Relief Act;

6) State Tort Claims Act does not contain language concerning terrorists or bombings, with regard to exemption from liability; and,

7) Lack of trained EOC personnel for sustained operations.

K. The Oklahoma Department of Public Safety (Oklahoma Highway Patrol)

Mission/Activities: Provided immediate response of patrol units and medical assistance at bomb site. Responding units provided assistance to the Oklahoma City Police Department in traffic control and securing the crime scene. Bomb squad and tactical team were part of the initial response.

For the long-term mission, provided security, communications, law enforcement, traffic control and bomb team assistance. Additional duties included dignitary protection and escort, transportation and security of suspects, and assistance to Secret Service concerning the Presidential visit.

Lessons Learned/Recommendations:

1) Multiple communication channels with no common frequencies;

2) Limited coordination of information with operations centers, versus on-site command posts;

3) Lack of portable communication equipment;

4) Accessibility by the media to monitor radio and cellular phone communications; and,

5) Parallel requests going through separate command structures for similar items.

L. The Oklahoma State Bureau of Investigation (OSBI)

Mission/Activities: The mission for employees of OSBI is to provide exceptional investigative, laboratory and informational services to law enforcement, prosecutors, legislative committees and the Governor of the State of Oklahoma, in support of their efforts to promote the highest quality of life for the citizens of the state. During the response to the

Murrah Building Bombing, OSBI undertook the following major missions:

1) Tracking of accounted and unaccounted victims;

2) Manned telephones at Task Force site;

3) Provided expertise in victim identification through DNA and fingerprint analysis, including collection of latent prints from victims' homes;

4) Housed BATF trace explosive detection instrumentation and assisted in evidence collection;

5) Assisted BATF and FBI in taking and processing aerial and other photographs;

6) Assisted BATF and FBI in running-down investigative leads;

7) Developed composite drawings;

8) Created and modified time-line charts for use by the FBI and the Department of Justice; and,

9) Assisted FBI in creating suspect line-ups by providing facility in which to house subjects to be included, and by taking photographs.

Lessons Learned/Recommendations: None Submitted

M. The Oklahoma Department of Transportation

Mission/Activities: Primarily provided traffic control access from the Interstate Highways and the downtown area. Additionally, provided personnel and equipment to support search and rescue efforts, as well as the FBI in search for evidence.

Lessons Learned/Recommendations: None Submitted

N. The Salvation Army

Mission/Activities: Within 40 minutes, the Oklahoma City Command had two mobile feeding and response units on site, prepared to serve. In approximately two hours from that time, two other units from Tulsa and Ada responded and were on site. The Salvation Army deployed seven mobile feeding units to the site, in total.

The normal mission of The Salvation Army, in times of crisis, is to provide physical and spiritual relief and comfort to victims of the tragedy, as well as to serve rescuers and workers involved in the response/recovery operation. This includes mobile feeding units supplying routine refreshments, as well as standard meals. Additionally, provisions are made for counseling and spiritual guidance, a conduit for requested supplies and materials, financial managerial casework assistance for victims and their relatives, and other general support activity, as requested.

The Salvation Army operated three mobile Social Services offices and provided personnel in cooperation with FEMA at the Recovery Service Center.

Lessons Learned/Recommendations: None Submitted

O. Volunteer Organizations Active in Disasters (VOAD)

Mission/Activities: This group is traditionally the catalyst for accepting and processing material and cash donations and for the creation of an unmet needs committee during a disaster. Early in the disaster, donations management was intense, and overwhelmed many of the organizations who were trying to keep up with the sheer volume of material and cash coming in.

Although it was not a priority during the early days of this disaster, within three weeks following the event, it became apparent that some of the needs of the victims would best be served by forming a committee. The group is now known as the Oklahoma City Bombing Disaster Resource Coordination Committee (RCC) of Oklahoma City. They have coordinated interagency distribution of nearly $2 million in aid through one of a dozen case management agencies, and from nearly 80 fund sources, established by a variety of social, religious, service and fraternal organizations. The National Association of Social Workers (NASW) has organized a focus group for long-term disaster recovery needs, which is being staffed by some of the key participants on the RCC. This group is working to develop a database for referring victims with long term needs, beyond the time when the RCC considers it practical to continue its weekly, or even monthly meetings.

Lessons Learned/Recommendations: Volunteer Organizations Active in Disasters should be solicited to work with the state during non-disaster times to be prepared for donations management, and have a plan for the fast effective creation of an unmet needs committee. The effort needs to include both logistics for material and cash donations. The

availability of organizations that have disaster fund sources, as well as capabilities for trucking and storage should be ascertained, and locations should be tracked so that deployment and use can be affected as soon as possible following an incident.

The Oklahoma Department of Civil Emergency Management

After Action Report

Alfred P. Murrah Federal Building Bombing

19 April 1995 in Oklahoma City, Oklahoma

Statistics

The following page consist of a variety of statistical charts and information pertaining to the effects of the 19 April bombing of the Alfred P. Murrah Building. ODCEM has made every attempt to take statistical information provided by all agencies and levels of government involved and consolidate said data into the most accurate information possible.

OKLAHOMA CITY BOMBING

Fatalities

Fatalities in the Murrah Building: 160
Fatalities in the Athenian Building: 4
Fatalities in the OWRB Building: 2
Fatalities outside, near the blast: 1
Fatalities of responding emergency personnel: 1

TOTAL: 168

Fatalities by Agency:
Federal:

Department of Agriculture: 7
Department of Defense: 5
DOT/Federal Highway Administration: 11
Drug Enforcement Administration: 5
Federal Credit Union: 18
Credit Union Customers: 3
General Services Administration: 2
Housing and Urban Development: 35
Secret Service: 6
Social Security Administration: 16
SSA Customers: 24
U.S. Army Recruiting Battalion: 7
Visitors: 1
U.S. Customs Service: 2
U.S. Marine Corps Recruiting Station: 2

State:

Oklahoma Water Resources Board: 2

All Others:

America's Kids Day-Care Center (3 employees, 15 children): 18
Company representative making a delivery to the Murrah Building: 1
Citizen in parking lot across from Murrah Building: 1 Company employee working in Athenian Building: 1 Nurse responding to the disaster: 1

Injuries

Summary of Injuries:

People treated in local hospitals (426)

People admitted to hospitals: 82
People treated and released from emergency rooms: 344

People treated in private physician's office (175)

Types of Injuries Among Hospitilized Persons (82 total)

Lacerations, abrasions and contusions: 77
Fractures and dislocations: 36
Head injuries: 35
Eye injuries: 21
Burns: 5

Types of Injuries Among Persons Treated and Released (344 total)

Lacerations, abrasions and contusions: 285
Fractures and dislocations: 13

Head injuries: 40
Eye injuries: 20

Statistics provided by The Oklahoma Department of Health

State Medical Examiner's Means of Victim Identification

Dental and Fingerprints: 77
Dental: 44
Fingerprints: 25
Radiology: 6
Visual - Hospital: 4
Palmprint: 4
DNA: 3
Footprint: 1
Toeprint: 1
Dental, Fingerprints and DNA: 1
Visual Statistics, Marked Scar and Photograph: 1
Palmprint and Dental: 1

TOTAL: 168

Exhibits

Exhibit A - Murrah Building Floor Plan
Image of Floors 1 and 2 (73Kb)
Image of Floors 3 and 4 (66Kb)
Image of Floors 5 and 6 (60Kb)
Image of Floors 7 and 8 (59Kb)
Image of Floor 9 (37Kb)

Exhibit B - Downtown Reference Map (93Kb)

Exhibit C - Governor's Executive Order (115Kb)

Exhibit D - President's Emergency Declaration (91Kb)

Exhibit E - Downtown Map with Response Elements (94Kb)

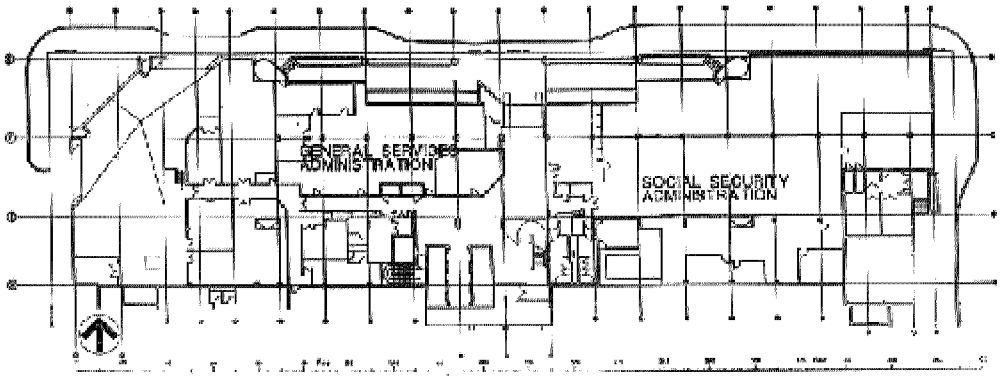
Exhibit F - Urban Search & Rescue Task Forces (72Kb)

Exhibit G - President's Major Disaster Declaration (68Kb)

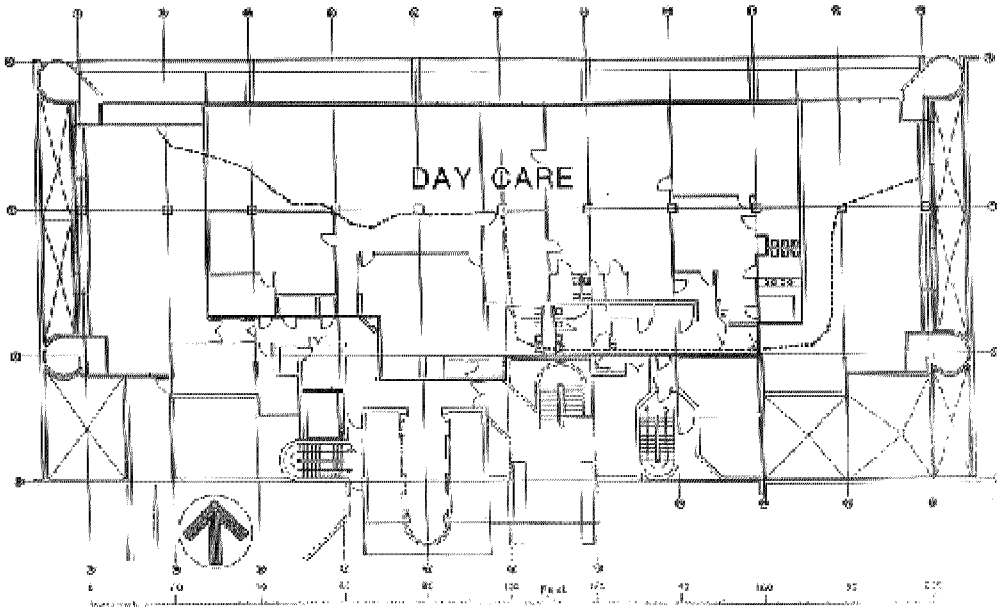
EXHIBIT A

ALFRED P. MURRAH BUILDING FLOOR PLAN

FIRST FLOOR



SECOND FLOOR



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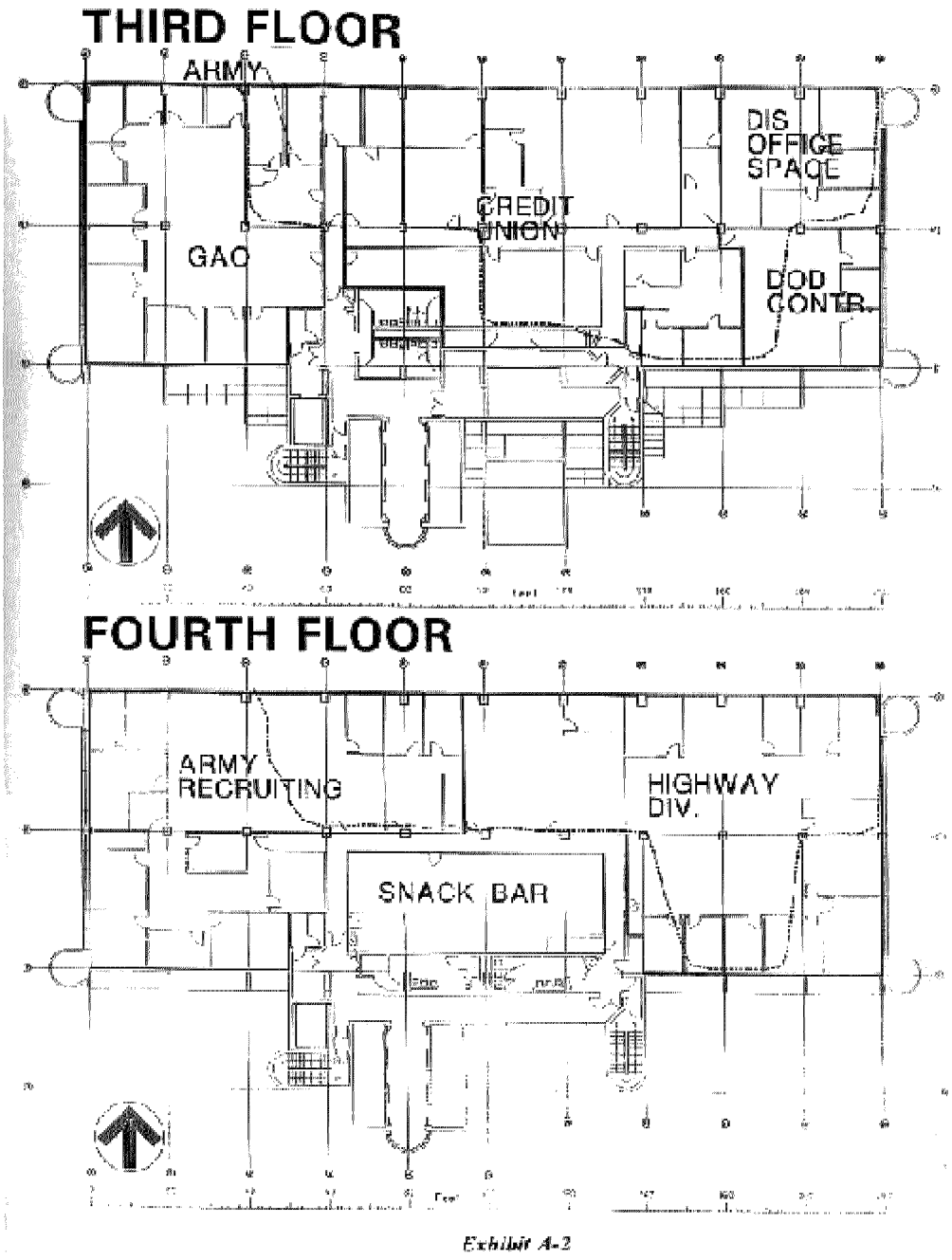

THIRD FLOOR
ARMY
DIS
OFFICE
SPACE
CREDIT
UNION
GAO
DOD
CONTR.
FOURTH FLOOR
ARMY
RECRUITING
HIGHWAY
DIV.
SNACK BAR

Exhibit A-2

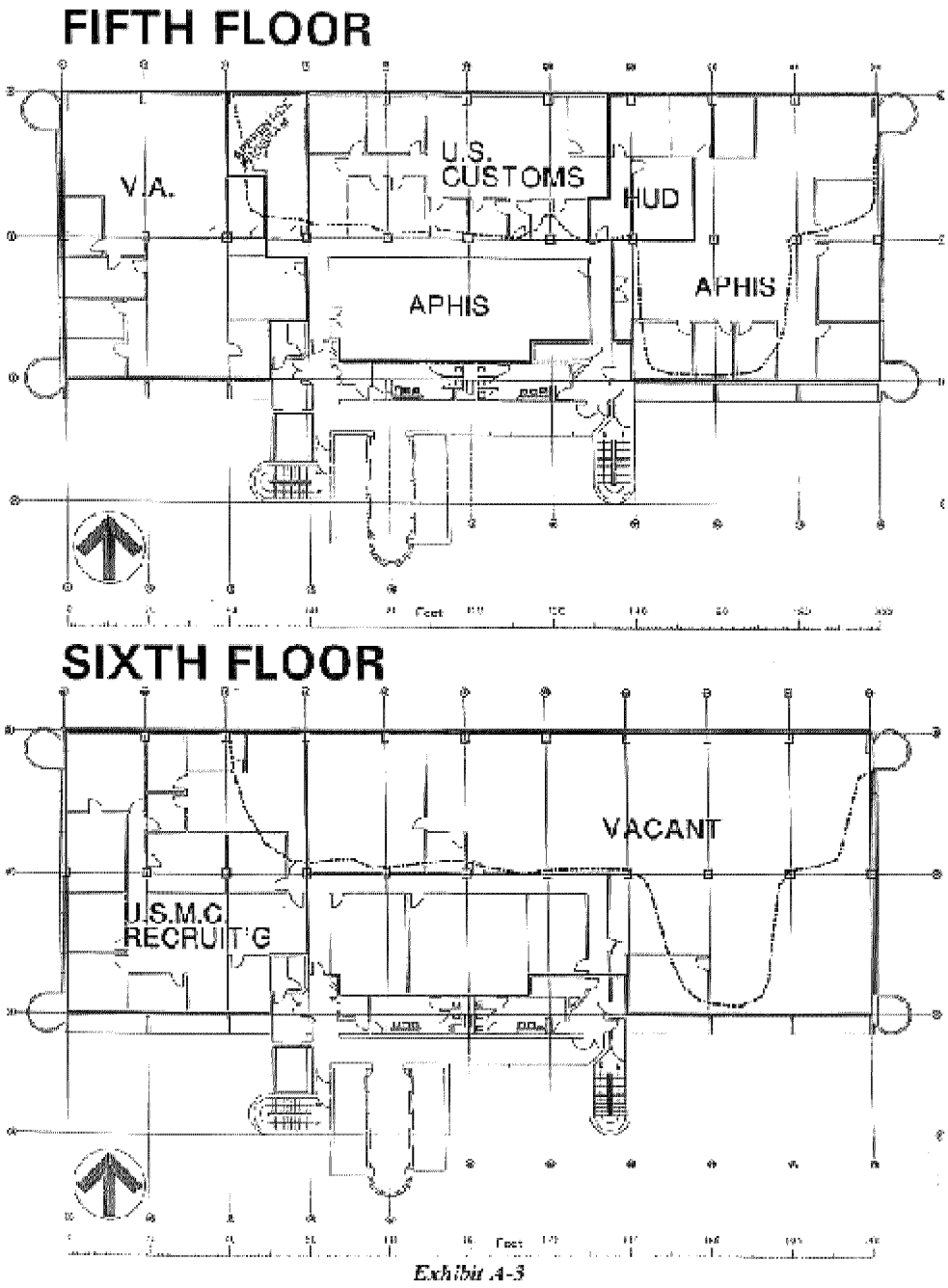

FIFTH FLOOR
V.A.
U.S.
CUSTOMS
HUD
APHIS
APHIS
SIXTH FLOOR
VACANT
U.S.M.C.
RECRUIT'G

Exhibit A-3

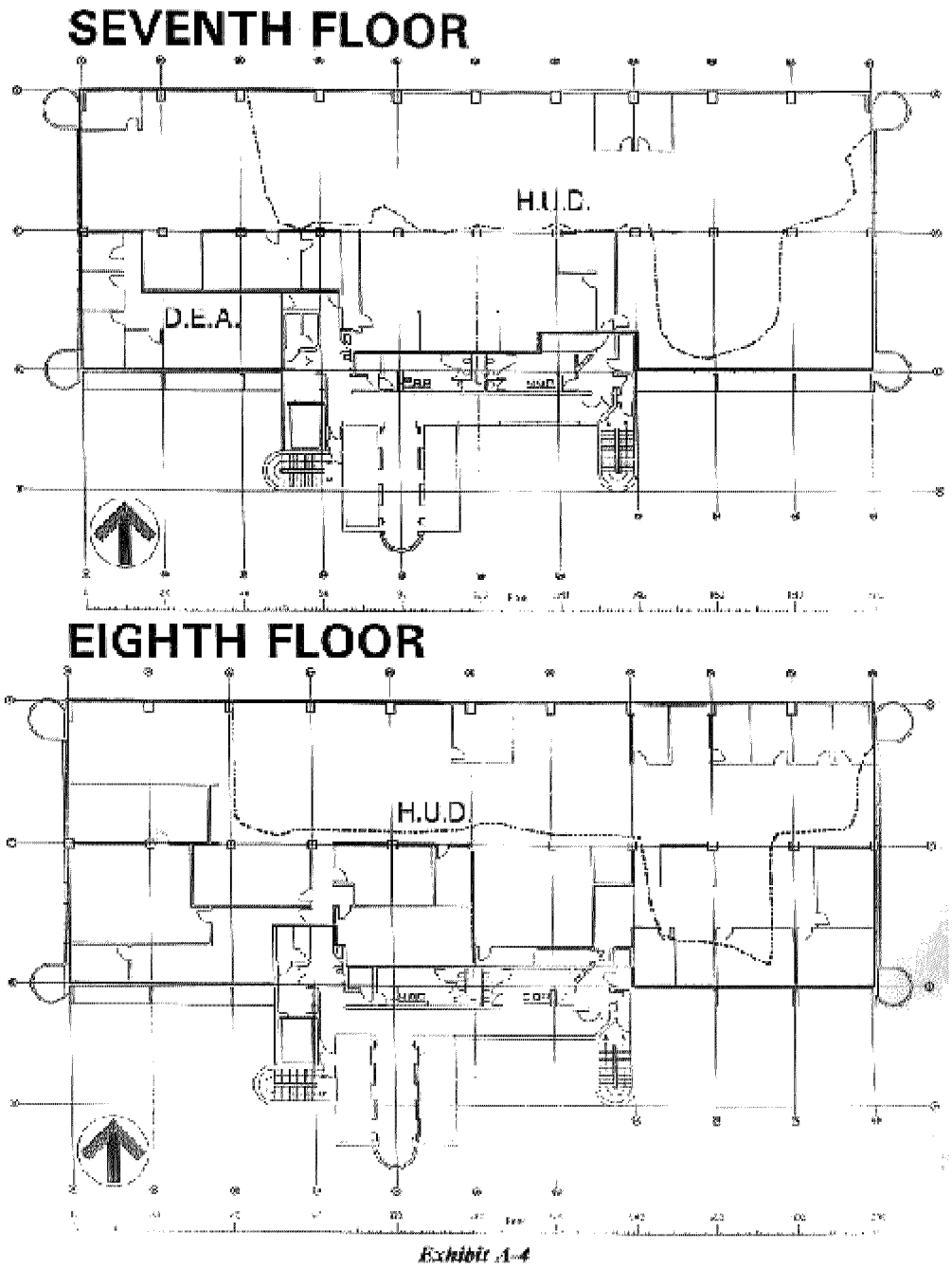
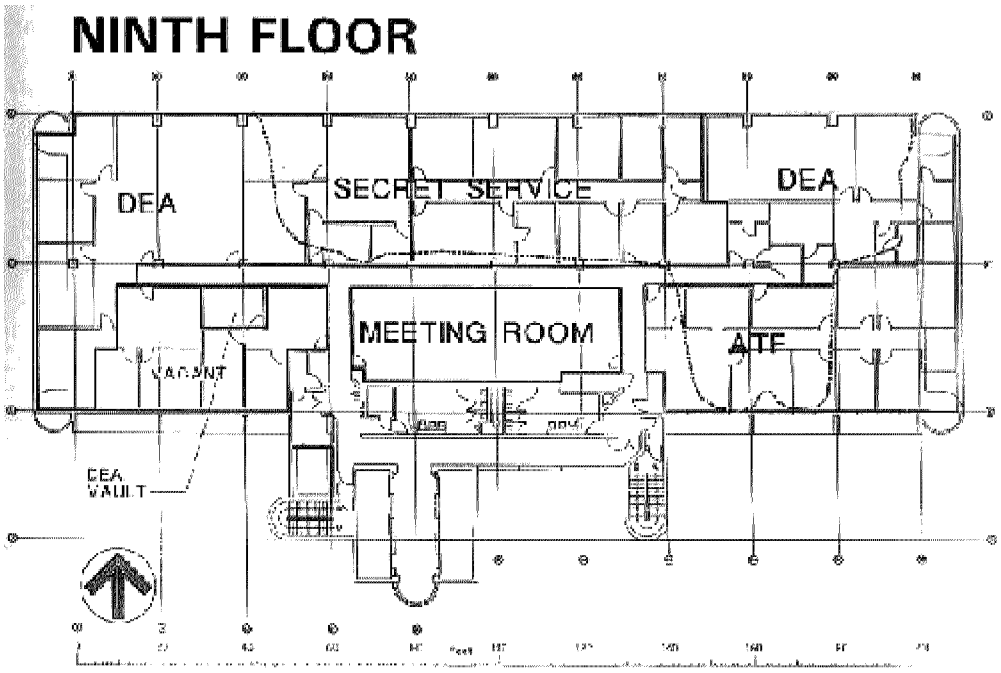
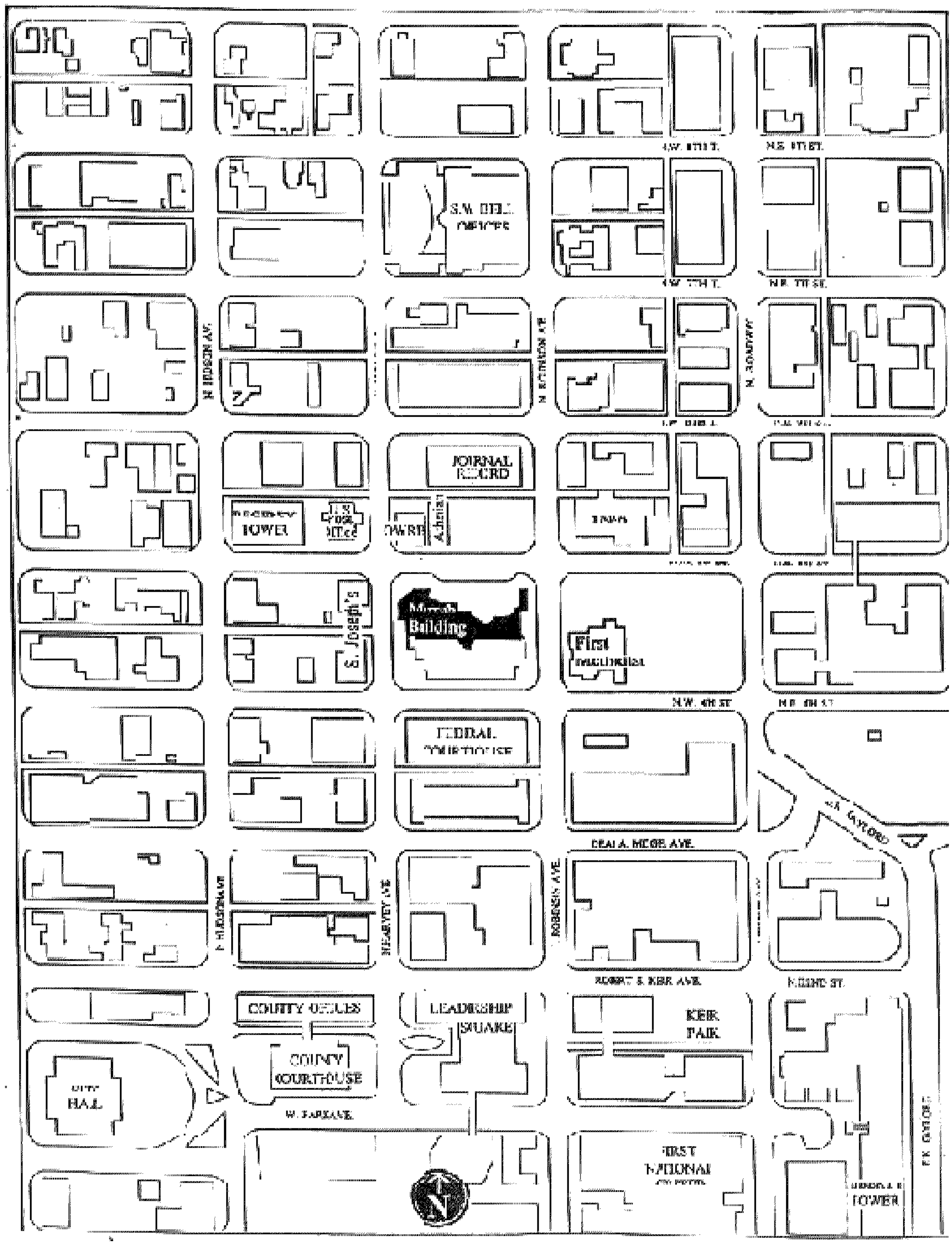


Exhibit A-4


NINTH FLOOR
DEA
SECRET SERVICE
DEA
MEETING ROOM
ATF
VACANT
DEA
VAULT



N.E. 8TH ST.
N. HUDSON AV.
N. ROBINSON AVE
N. BROADWAY
JOURNAL RECORD
TOWER
Athenian
Murrah Building
St. Joseph's
First
N.W. 4th ST
N.E. 4th ST
FEDERAL
DEAN A. MCGEE AVE.
N. HARVEY AVE
ROBINSON AVE.
ROBERT S. KERR AVE.
COUNTY OFFICES
LEADERSHIP SQUARE
KERR PARK
COUNTY COURTHOUSE
HALL
W. PARK AVE.
FIRST NATIONAL
TOWER
N

Exhibit 3

STATE OF OKLAHOMA

EXECUTIVE DEPARTMENT

EXECUTIVE ORDER 95-

WHEREAS, The Executive Department has caused a survey to be made, to the extent possible in the area of Oklahoma City affected by a devasting explosion at the A. P. Murrah Federal Building at approximately 9:00 a.m. on Wednesday, April 19, 1995, and has determined an emergency exists necessitating emergency measures for the protection of the public peace, health, and safety and the preservation of the lives and property of the people of this State; and

WHEREAS, it is necessary to provice for the rendering of mutual aid among the State and political subdivisions of the State and to cooperate with the federal government with respect to carrying out disaster emergency functions during the continuance of the state of emergency pursuant to the provisions of the Oklahoma Civil Defense and Emergency Resources Management Act, 63 O.S. 1991, Sections 683.1 et seq.

NOW THEREFORE, by the authority conferred upon me by the Constitution and the Laws of the State of Oklahoma, the following declarations are made:

1. There is hereby declared a disaster emergency caused by an explosion in Oklahoma City, Oklahoma which has threatened the lives and property of the people of this State and the public's peace, health and safety.

2. The resources of all State departments and agencies available to meet the emergency are hereby committed to the reasonable extent necessary to prevent, minimize and repair injury and damage and to protect lives, the same to be coordinated by the Director of the Department of Civil Emergency Management with comparable functions of the federal government and political subdivisions of the State.

3. Said declaration of emergency shall terminate as provided in 63 O.S. 1991, Sections 683.3 (3).

IN WITNESS WHEREOF, I have hereunto set my hand and caused the Seal of the State of Oklahoma to be affixed at Oklahoma City, Oklahoma, this 19th Day of April, 1995.

BY THE GOVERNOR OF THE STATE OF OKLAHOMA

ATTEST:

Secretary of State

Exhibit C

THE WHITE HOUSE

WASHINGTON

April 19, 1995

The Honorable James L. Witt
Director
Federal Emergency Management Agency
Washington, D.C. 20472

Dear Mr. Witt:

I have determined that the explosion at the Federal courthouse in Oklahoma City, on April 19, 1995, in the State of Oklahoma is of sufficient severity and magnitude to warrant an emergency declaration under subsection 501(b) of the Robert T. Stafford Disaster Relief and Emergency Assistance Act (the Stafford Act). My decision to make this declaration pursuant to subsection 501(b) of the Stafford Act is based upon the fact that the explosion occurred at a Federally-owned courthouse. I, therefore, declare that such an emergency exists in the city of Oklahoma City in the State of Oklahoma.

In order to provide Federal assistance, you are hereby authorized to coordinate and direct other Federal agencies and fund activities not authorized under other Federal statutes and allocate from funds available for these purposes, such amounts as you find necessary for Federal emergency assistance and administrative expenses.

Pursuant to this emergency declaration, you are authorized to provide emergency assistance as you deem appropriate under Title V of the Stafford Act at 100 percent Federal funding.

Sincerely,

Bill Clinton

Exhibit D

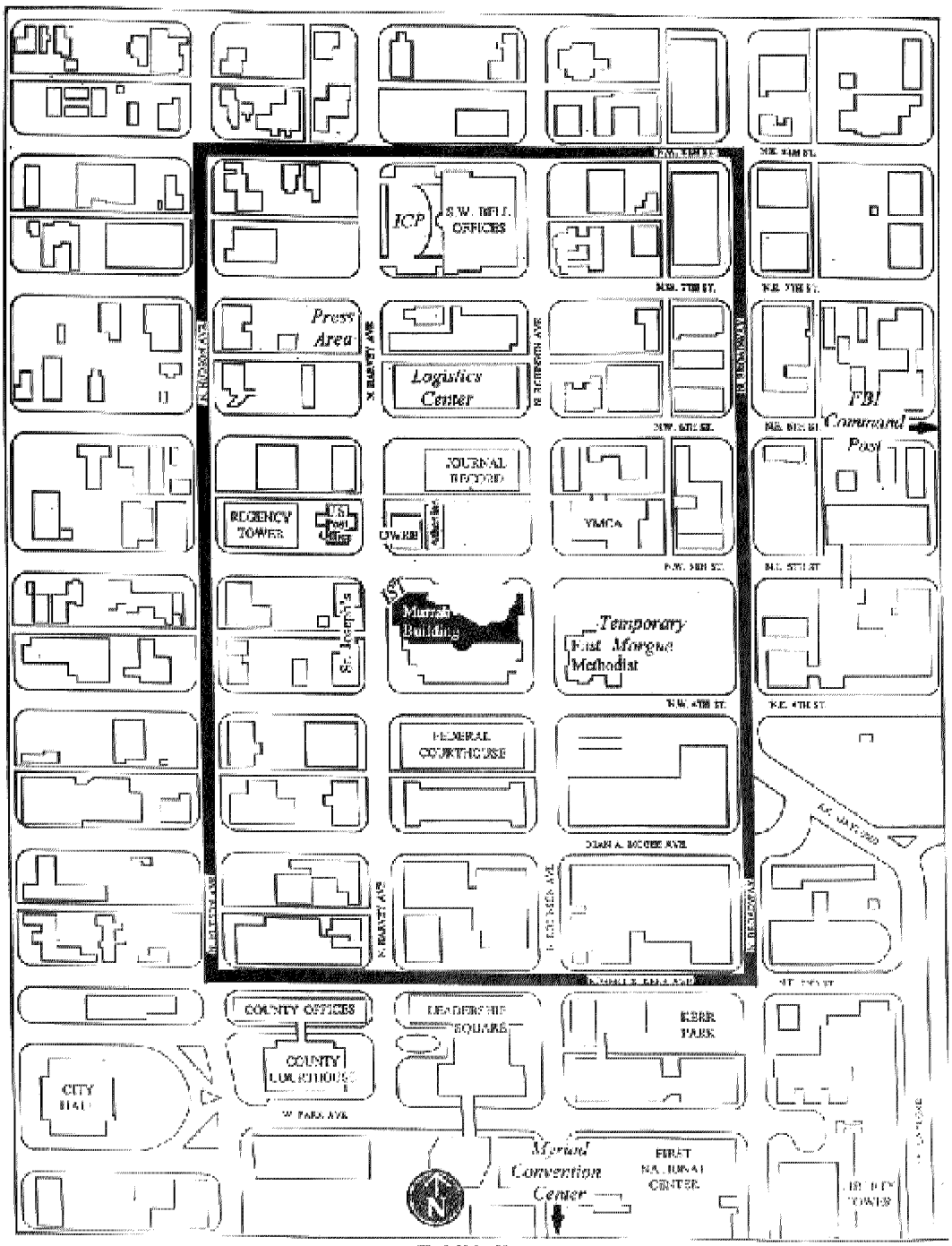

ICP
S.W. INCIDENT OFFICERS
Press Area
Logistics Center
FBI Command Post
JOURNAL BUILDING
REGENCY TOWER
YMCA
Murrah Building
Temporary Fast Morgue Methodist
FEDERAL COURTHOUSE
COUNTY OFFICES
COUNTY COURTHOUSE
CITY HALL
Myriad Convention Center
FIRST NATIONAL CENTER
KERR PARK

Exhibit E

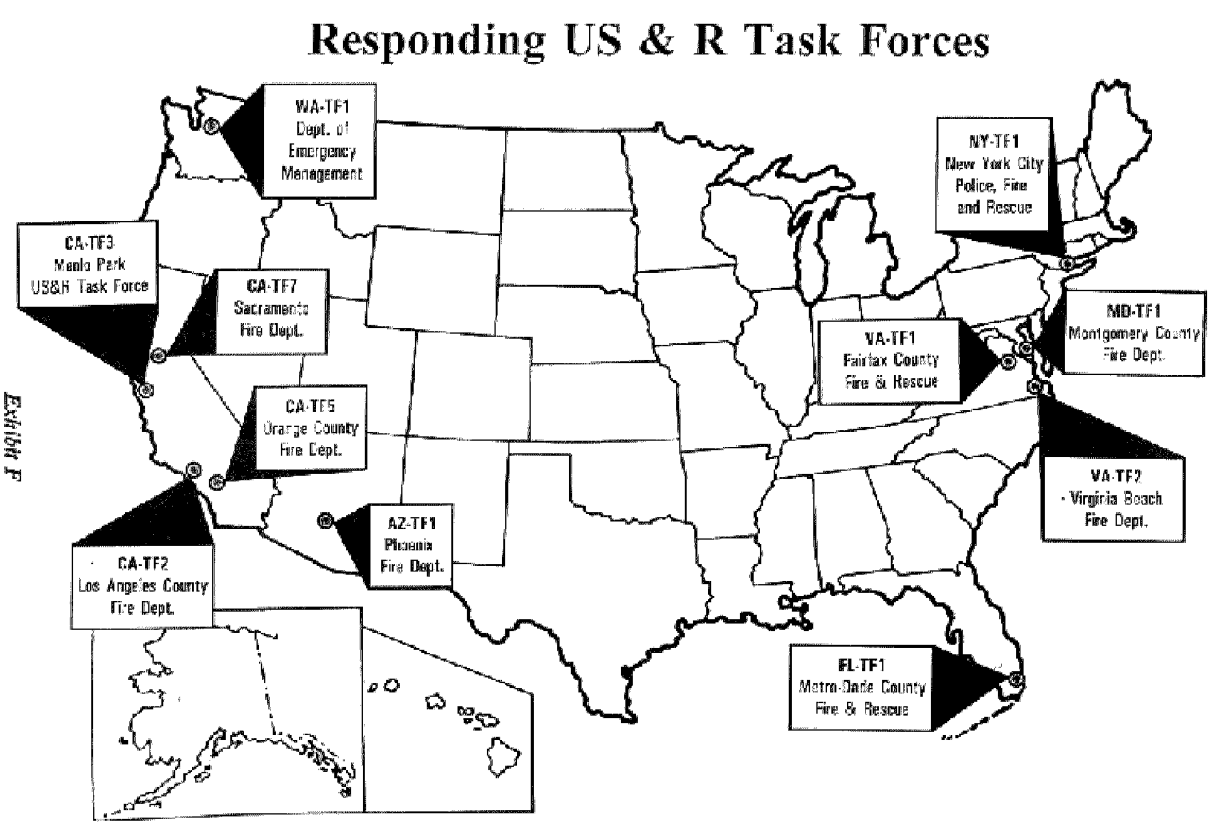

Responding US & R Task Forces
WA-TF1
Dept. of
Emergency
Management
NY-TF1
New York City
Police, Fire
and Rescue
CA-TF3
Menlo Park
US&R Task Force
CA-TF7
Sacramento
Fire Dept.
MD-TF1
Montgomery County
Fire Dept.
VA-TF1
Fairfax County
Fire & Rescue
CA-TF5
Orange County
Fire Dept.
VA-TF2
Virginia Beach
Fire Dept.
AZ-TF1
Phoenix
Fire Dept.
CA-TF2
Los Angeles County
Fire Dept.
FL-TF1
Metro-Dade County
Fire & Rescue

Exhibit F

THE WHITE HOUSE

WASHINGTON

April 26, 1995

The Honorable James L. Witt
Director
Federal Emergency Management Agency
Washington, D.C. 20472

Dear Mr. Witt:

I have determined that the explosion at the Alfred P. Murrah Federal building in Oklahoma City, on April 19, 1995, in the State of Oklahoma is of sufficient severity and magnitude to warrant a major disaster under the Robert T. Stafford Disaster Relief and Emergency Assistance Act (the Stafford Act). I, therefore, declare that such a major disaster exists in Oklahoma County in the State of Oklahoma.

In order to provide Federal assistance, you are hereby authorized to allocate from funds available for these purposes, such amounts as you find necessary for federal disaster assistance and administrative expenses.

You are authorized to provide Individual Assistance in the designated area. Public Assistance may be added at a later date, if requested and warranted.

Sincerely,

Bill Clinton

Exhibit G

Oklahoma Department of Civil Emergency Management

Exhibit H

Personnel Roster

April 19, 1995

Director: Tom Feuerborn
Deputy Director: Gordon Keith Allen
Public Information: Gene Krier
Executive Secretary: Barbara Taylor
Receptionist: Bonnie McKelvey
Receptionist: Rose Smith

Disaster Recovery Manager: Albert Ashwood
Recovery Officer: Larry Culp

Chief of Operations: Ron Hill
Earthquake Officer: Larry Brewer
Training Officer: Larry Loomis
Exercise Officer: Fred Liebe
Communications Officer Ken Fields
Senior Operations Officer: Joe McGraw
Operations Officer: Joe Mays
Hazardous Materials Officer: Ken Lumry
Radiological Technician: John Ewing
Radiological Technician: Roy Porter
Administrative Assistant: Connie Dill
Training Secretary: Sherry McHendry

Chief of Planning: Dale Magnin
Planner: Fred Wiener

Chief Financial Officer: Bill Aughtry
Accountant: Murray Kelley

Personnel: Christine Jolly
Purchasing: Margaret Barnard

Exhibit I

Acronyms

ACOE - Army Corps of Engineers
ARC - American Red Cross
BATF - Bureau of Alcohol Tobacco & Firearms
CAP - Civil Air Patrol
CISD - Critical Incident Stress Debriefings
DCO - Defense Coordinating Officer
DEA - Drug Enforcement Administration
DFO - Disaster Field Office
DH&HS - Department of Health and Human Services
DHS - Department of Human Services
DMORT - Disaster Mortuary Team
DOD - Department of Defense
DoJ - Department of Justice
DOT - Department of Transportation
DPS - Department of Public Safety
EMSA - Emergency Medical Services Authority
EOC - Emergency Operations Center
EOP - Emergency Operations Plan
FBI - Federal Bureau of Investigation
FCO - Federal Coordinating Officer
FEMA - Federal Emergency Management Agency
FHA - Federal Highway Administration
FRP - Federal Response Plan
GAO - General Accounting Office
GSA - General Services Administration
HUD - Housing and Urban Development
IC - Incident Commander
ICP - Incident Command Post
ICS - Incident Command System
IST - Incident Support Team
I&FG - Individual and Family Grant
IEMS - Integrated Emergency Management System

IRS - Internal Revenue Service
JIC - Joint Information Center
JIS - Joint Information System
ME - Medical Examiner
MERS - Mobile Emergency Response Support
MACC - Multi-Agency Coordination Center
NWS - National Weather Service
OCFD - Oklahoma City Fire Department
OCPD - Oklahoma City Police Department
ODCEM - Oklahoma Department of Civil Emergency Management
OHP - Oklahoma Highway Patrol
OMD - Oklahoma Military Department
ONG - Oklahoma National Guard
OSBI - Oklahoma State Bureau of Investigation
OWRB - Oklahoma Water Resources Board
PHS - Public Health Service
RCC - Resource Coordination Committee
ROC - Regional Operations Center
RRP - Regional Response Plan
RSC - Recovery Service Center
SBA - Small Business Administration
SCO - State Coordinating Officer
SEOC - State Emergency Operations Center
SEOP - State Emergency Operations Plan
SSA - Social Security Administration
US&R - Urban Search and Rescue
VA - Veterans Administration
VOAD - Volunteer Organizations Active in Disasters

APPENDIX E
PENTAGON AFTER ACTION REPORT

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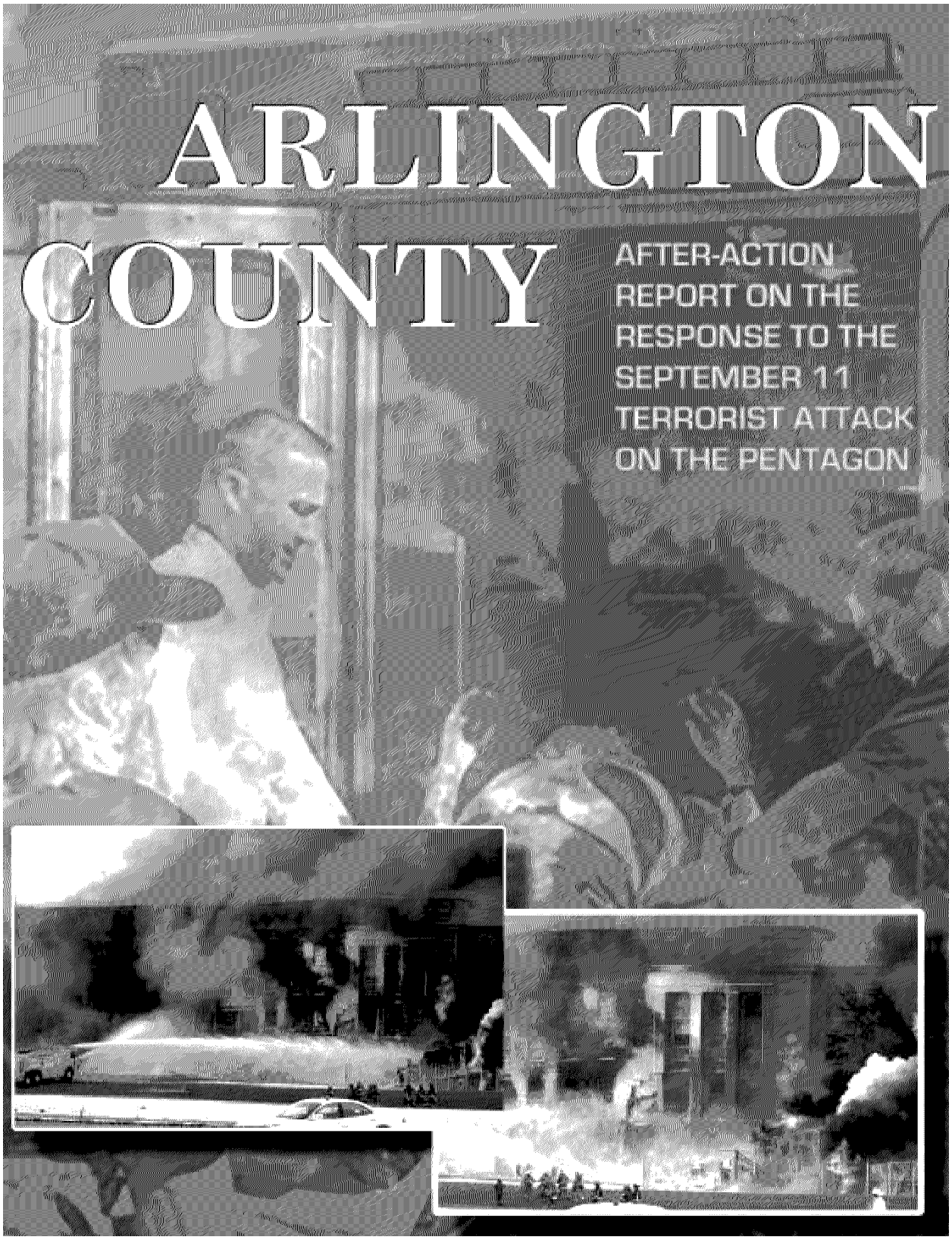
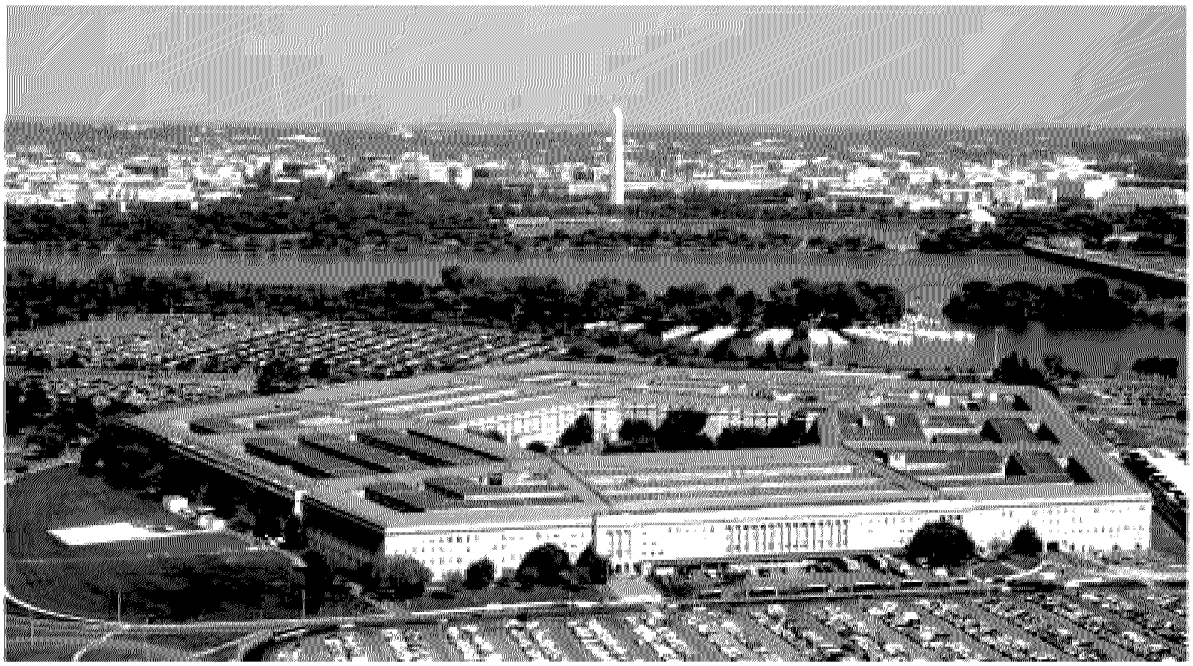

ARLINGTON
COUNTY
AFTER-ACTION REPORT ON THE RESPONSE TO THE SEPTEMBER 11 TERRORIST ATTACK ON THE PENTAGON



"The whole world wept tears of pride as these men and women unfurled the Stars and Stripes from atop the Pentagon's roof, an image that will be engraved into American memory from this time forward. To each of you, for your courage and professionalism—and for helping to turn Arlington's darkest moment into its finest hour—we thank you."

Jay Fisette
Chairman, Arlington County Board

This document was prepared for Arlington County by Titan Systems Corporation. It was accomplished through a grant from, and the support of, the Department of Justice, Office of Justice Programs, Office for Domestic Preparedness, under Contract Number GS10F0084K, Order Number 2001F_341.

TABLE OF CONTENTS

LIST OF FIGURES

INTRODUCTION

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ARLINGTON COUNTY AFTER-ACTION REPORT ON THE RESPONSE TO THE SEPTEMBER 11 TERRORIST ATTACK ON THE PENTAGON

This After-Action Report (AAR) describes the activities of Arlington County and the supporting jurisdictions, government agencies, and other organizations in response to the September 11, 2001, terrorist attack on the Pentagon. This incident produced a unique paradigm of response considerations and requirements. It was a major fire and rescue operation within the broader context of a terrorist attack. This terrorist attack occurred in Arlington County, VA, but at a U.S. military facility under the direct control of the Secretary of Defense. The incident response engaged a large number of agencies, organizations, and individuals from all levels of government and the private sector, and it lasted for an extended period.

This AAR conveys the response, rescue, and recovery activities as seen through the eyes of the response community. It is a holistic and comprehensive report, incorporating the views of persons at all levels and from all participating organizations. The information in this AAR was compiled, analyzed, and produced during a 6-month period. The AAR project team conducted 92 separate debriefing sessions and interviewed approximately 475 participants. A total of 550 survey forms were distributed to response community members in Arlington County and neighboring jurisdictions. The information collected yielded more than 2,000 data points that were subsequently integrated into nearly 800 information elements. The project team also reviewed numerous planning documents, mutual-aid agreements, journals, logbooks, and other transaction records. The extensive review of documents and materials supplemented the information received from interviews and survey forms.

The information compiled for this AAR represents the views of many individuals taken at different times during the response. It produced legitimate, but often varying, perspectives. A robust three-tiered validation process was employed to ensure the information conveyed in this AAR is consistent and accurate. Tier-1 validation consisted of project team members conducting detailed technical reviews of the information collected and analyzed by other colleagues. Thus, team members had a professional colleague reviewing their material. Next, each project team member reviewed all the compiled AAR data and met to resolve conflicting information and identify anomalies. Validation interviews were then conducted with key first responders to verify preliminary findings and recommendations. Tier-2 validation engaged a group of senior response community experts in a comprehensive review, followed by debriefings and discussions between the reviewers and key project team members. Finally, senior representatives of key participating organizations reviewed and validated the Tier-3 draft report.

This AAR is organized into four principal annexes and four supporting appendices. **Annex A – Fire Department Operations** includes all aspects of fire, rescue, and Emergency Medical Services (EMS) activities performed by Arlington County, as well as supporting jurisdictions, agencies, and organizations operating under mutual-aid or similar provisions. **Annex B – Hospitals and Clinics** describes the response of

medical treatment centers throughout the Washington Metropolitan Area, including hospitals, urgent care centers, and military health clinics. **Annex C – Law Enforcement** presents the activities of those law enforcement agencies sharing primary jurisdictional responsibilities for this incident, the Arlington County Police Department (ACPD), the Defense Protective Service (DPS), and the Federal Bureau of Investigation (FBI), as well as many other law enforcement organizations that provided response support. **Annex D – Emergency Management and the Emergency Operations Center** presents the activities of the Arlington County government in support of the first responders and citizens of Arlington County.

Each annex is organized somewhat differently, reflecting the nature of its content. The Introduction to each annex explains this organization. However, within the various annex parts or sections, the information is conveyed in a standard format: observations describe what transpired; findings present what was learned from the perspective of the response participants; recommendations and lessons learned describe potential improvements that were naturally derived from the findings.

The remainder of this introduction sets the stage and gives the reader a context for the annexes. It describes **Arlington County, VA,** its form of government, and provisions for emergency management. It also describes the target of the attack, the **Pentagon.** Finally, it describes the events of **September 11, 2001,** and covers selected response efforts with a final **Summary.**

Arlington County, VA

Arlington County, VA, is geographically the smallest county in the United States, according to the National Association of Counties, occupying an area slightly less than 26 square miles. However, it is a bustling, compact, urban residential and business center. This was not always the case. Originally part of Fairfax County, in 1791, the Virginia General Assembly ceded the land that is now Arlington County to the Federal Government as part of the new national capital. It was returned to Virginia and designated Alexandria County in 1847. The county population in 1900 was 6,430. It became Arlington County in 1920. Today, its residential population of 190,000 grows substantially on workdays. Employees report to the many government agencies in Arlington and the private companies that support those agencies. The Pentagon alone has a workforce of more than 23,000 military and civilian personnel. Additionally, approximately 25,000 people visit Arlington's tourist attractions each day, including Arlington National Cemetery, the Iwo Jima Memorial, and the Pentagon. Arlington County is Northern Virginia's gateway to the Nation's capital. Located just across the Potomac River from the District of Columbia, every highway and railway connecting Virginia and the District of Columbia runs through Arlington County. Ronald Reagan Washington National Airport is located in Arlington County. It is the 16th busiest airport in the country, with an average of 47,000 passengers daily.

In 1922, the Virginia Supreme Court of Appeals ruled that Arlington is a contiguous, continuous, and homogenous community and cannot be further subdivided to form a town. In 1930, Arlington became the first county in the United States to adopt the manager form of government by popular vote.

A five-member County Board sets policies and makes all legislative decisions. The members are elected at large for rotating 4-year terms. The County Board selects its chairman annually. In calendar year 2001, Mr. Jay Fisette served as Chairman. Mr. Christopher Zimmerman was Vice Chairman and succeeded Mr. Fisette on January 1, 2002. The other County Board members are Ms. Barbara Favola, Mr. Paul Ferguson, and Mr. Charles Monroe.

Arlington County Board Members Favola, Monroe, Fisette, Zimmerman, and Ferguson.

A County Manager is appointed by the County Board and serves as the chief administrative officer, exercising authority over all government functions except the public schools, which are governed by a Superintendent appointed by the School Board. More than 3,400 Arlington County employees deliver services to county residents and businesses. Citizens advisory groups including commissions, task forces, and ad-hoc committees, focus on specific needs such as the Commission on Aging and the Human Rights Commission.

Mr. Ron Carlee was appointed County Manager in April 2001. However, Mr. Carlee's career with the Arlington County government extends more than 22 years. He previously served in the former Department of Human Services and in other county organizations. He led the county's $20 million year 2000

(Y2K) effort and was thoroughly familiar with Arlington County government operations and the characteristics and needs of Arlington's neighborhoods and citizens well before his current appointment.

County Manager Ron Carlee.

In 1956, Arlington County published a Comprehensive Emergency Management Plan (CEMP) that, with several revisions, continues to serve as the framework for county emergency operations. Arlington County Code designates the County Manager as the Director of Emergency Services. The CEMP establishes an Emergency Management Team, a group of senior managers knowledgeable in field operations who serve as an advisory body to the County Manager for all aspects of preparation, disaster response, and recovery. This core group is chaired by the Assistant County Manager (Mr. John Mausert-Mooney) and includes the Police Chief (Chief Edward Flynn), Fire Chief (Chief Edward Plaugher), Director of Public Works (Mr. Sam Kem), Assistant County Manager for Public Affairs (Mr. Richard Bridges), and School Superintendent (Dr. Robert Smith). The Fire Chief is also appointed as the Arlington County Coordinator of Emergency Services. His designated Deputy Coordinator of Emergency Services, Captain Mark Penn, serves as the staff coordinator for the Emergency Management Team.

Twenty-nine percent of Arlington County's 3,400 employees serve in its public safety organizations, the police department, the sheriff's office, and the fire department, providing a significant level of safety and protection to its citizens.

The 10 fire stations and 10 police beats are strategically located throughout Arlington County, which is also home to important modern medical treatment facilities. (See Figure 1.)

From the moment American Airlines Flight #77 crashed into the Pentagon at 9:38 a.m. on September 11, and for the succeeding 10 days, this was a major fire and rescue incident, the responsibility of the Arlington County Fire Department (ACFD). Chief Plaugher was appointed to his position in December 1993, following 24 years with the Fairfax County Fire and Rescue Department. The ACFD force of 266 career firefighters is organized into 3 shifts with a minimum daytime staff of 67, including 15 paramedics. Last year, the ACFD responded to nearly 24,000 emergency calls.

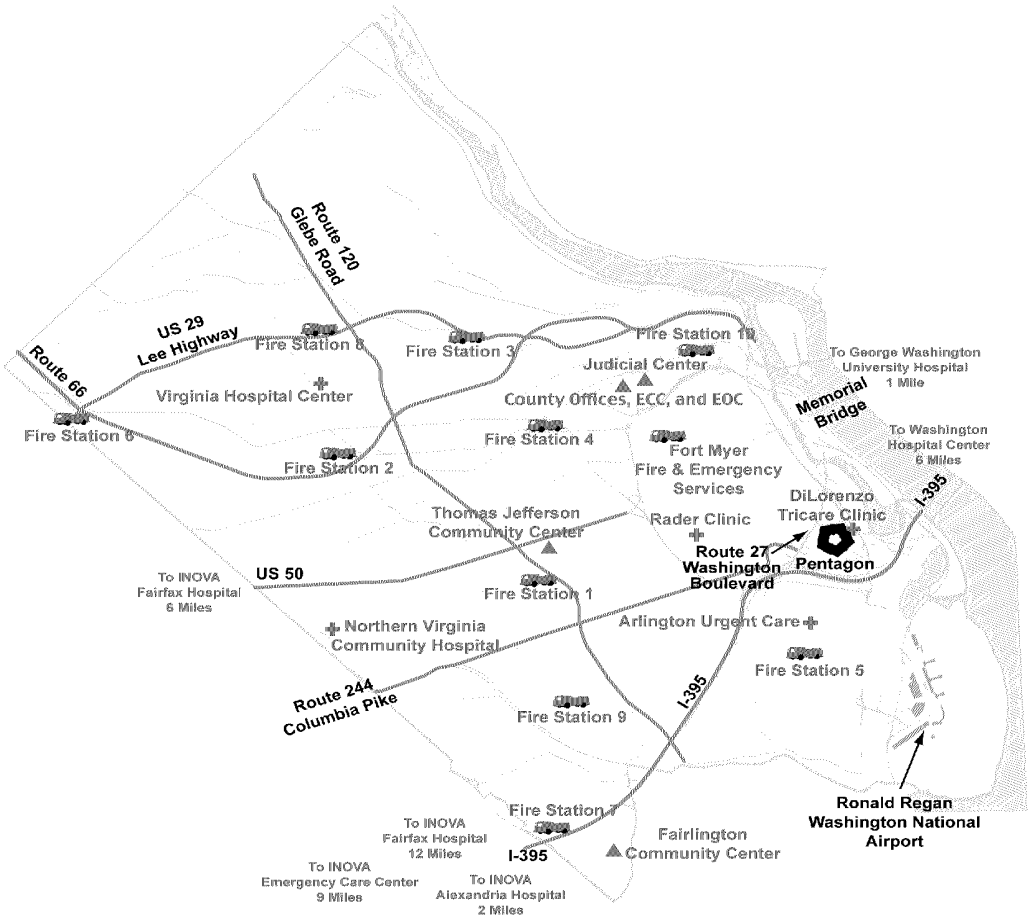
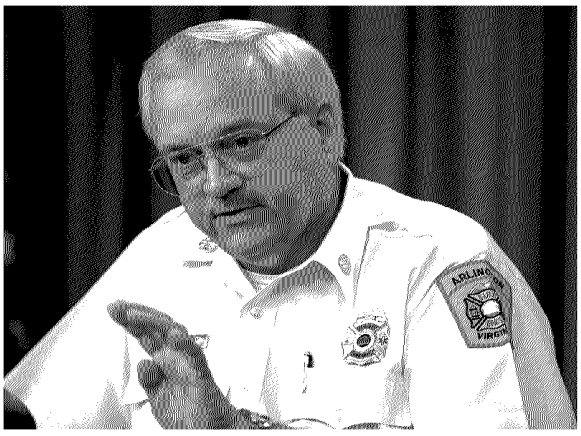


Figure 1. Arlington County government, public safety, and medical facilities.

When Chief Plaugher joined the ACFD more than 8 years ago, he focused on developing a more fully-integrated fire and EMS response capability. Battalion management teams were formed. An EMS captain is assigned to work with each battalion commander and with the fire/EMS officer assigned to each station. Together, they are responsible for all EMS training in the battalion. This guarantees both a better trained EMS force and the availability of two EMS captains at



Fire Chief Plaugher.

all times. Captain Edward Blunt and Captain Alan Dorn were both on duty the morning of September 11.

Following the March 1995 sarin nerve agent attack in a Tokyo subway that killed 12 commuters and injured hundreds more, Chief Plaugher and Assistant Chief for Operations James Schwartz and Assistant Chief for Technical Support John White recognized that America's first responders were not trained or equipped to handle such emergencies. As Chairman of the Washington Metropolitan Area Council of Governments Fire Chiefs Chemical/Biological Committee, Chief Plaugher asked that Council of Governments Chairman Jack Evans send a letter to the President of the United States. The letter described the risk of a terrorist attack and sought assistance in planning and preparing for such an event. As a result, the U.S. Public Health Service (USPHS) invited the Council of Governments to participate in a watershed project to develop the Nation's first locally-based terrorism response team with a hazardous materials (HazMat), medical management, and mass casualty decontamination capability. Chief Plaugher and the ACFD volunteered to work with the USPHS to develop the first prototype capability. This pioneering work produced the framework for the Metropolitan Medical Response System (MMRS) now embraced by more than 100 U.S. metropolitan areas. It was the predecessor to the National Medical Response Team (NMRT), which played an important response role at the Pentagon.

The success of the ACFD response to the terrorist attack on the Pentagon did not happen by chance. The ACFD's preparedness was the result of hard work, sound organization, extensive training, and outstanding leadership. Assistant Chief Schwartz has served in that capacity since 1997. His 18 years of experience with the ACFD and his proven leadership skills served him well when Chief Plaugher designated Chief Schwartz as the ACFD Incident Commander for the 10-day duration of the Pentagon fire and rescue operations. Assistant Chief White's extensive experience as EMS Captain and later as EMS Battalion Chief is reflected in his ability to serve in three critical capacities during the Pentagon response. Chief Schwartz first assigned Chief White as commander of the EMS Branch. Chief White spent 10 years supervising ACFD EMS operations. Next, he was directed to establish the Incident Command System (ICS) Logistics Section with a capability of sustaining fire and rescue operations and supporting the entire response force for 10 days. Once the Logistics Section was fully operational, Chief White became the Incident Command representative at the Joint Operations Center (JOC).

Police Chief Flynn.

Chief Edward Flynn leads the ACPD. Chief Flynn was appointed to his

current position in November 1997 after rising successively through the ranks from patrol officer to department chief while serving in communities in New Jersey and Massachusetts. Founded in 1940 with a force of 9 police officers, the ACPD now has 362 sworn officers and 85 civilian staff members. The ACPD holds the longest standing accreditation in the world from the Commission on Accreditation for Law Enforcement Agencies, Inc. (CALEA). It is responsible for all law enforcement and crime prevention services in Arlington County.

Sheriff Beth Arthur.

Sheriff Beth Arthur is an elected State constitutional officer. First appointed to succeed her predecessor in June 2000, Sheriff Arthur was elected to a 4-year term in November 2001. Sheriff Arthur directs a force of 270 sworn and civilian employees. The sheriff is responsible for managing the Arlington County Detention Center, courthouse security, and serving warrants.

The Pentagon

The Pentagon is home to the Nation's defense establishment. Located in Arlington County, VA, it has served for more than 60 years as a symbol of power in defense of freedom. Ironically, the groundbreaking ceremony for construction of the Pentagon took place on September 11, 1941, less than 3 months before the U.S. entry into World War II. Built on a site previously known as Arlington Farms, the five surrounding roadways dictated its pentagonal shape. The Pentagon's placement was personally approved by President Franklin Roosevelt to avoid obstructing the view of the U.S. Capitol from Arlington National Cemetery. The 380,000 tons of sand dredged from the Potomac River produced the reinforced concrete used to construct the building and the 41,492 concrete piles that supported it. This innovative use of concrete saved enough steel to build an additional aircraft carrier for the War Department. Construction of the Pentagon was completed in just 16 months at a cost of $83 million.

The Pentagon is a massive structure. The building covers 29 acres of land, with a floor area of almost 7 million square feet. Almost 18 miles of corridors connect the 5 floors of office space housing some 23,000 employees. The heating and refrigeration plant alone covers a full acre and more than 100,000 miles of telephone cables run through the building. Although the network of corridors, escalators, elevators, and stairwells is designed to speed movement from place to place, to the uninitiated, maneuvering through the Pentagon can be daunting. So much so that a Web site is used to help acquaint newly assigned staff with the intricacies of Pentagon navigation.

Additionally, the Pentagon is a building in transition. An extensive renovation effort began in 1998 and will continue until 2012. Each of the five Wedges

comprising the facility will undergo complete modernization. On September 11, contractors were completing the final work on Wedge One, which was ready for occupancy. (See Figure 2.)

The responsibility for contingency operations at Department of Defense (DoD) facilities in the Washington Metropolitan Area, including the Pentagon, belongs to the Commanding General of the Military District of Washington (MDW), Major General James Jackson.

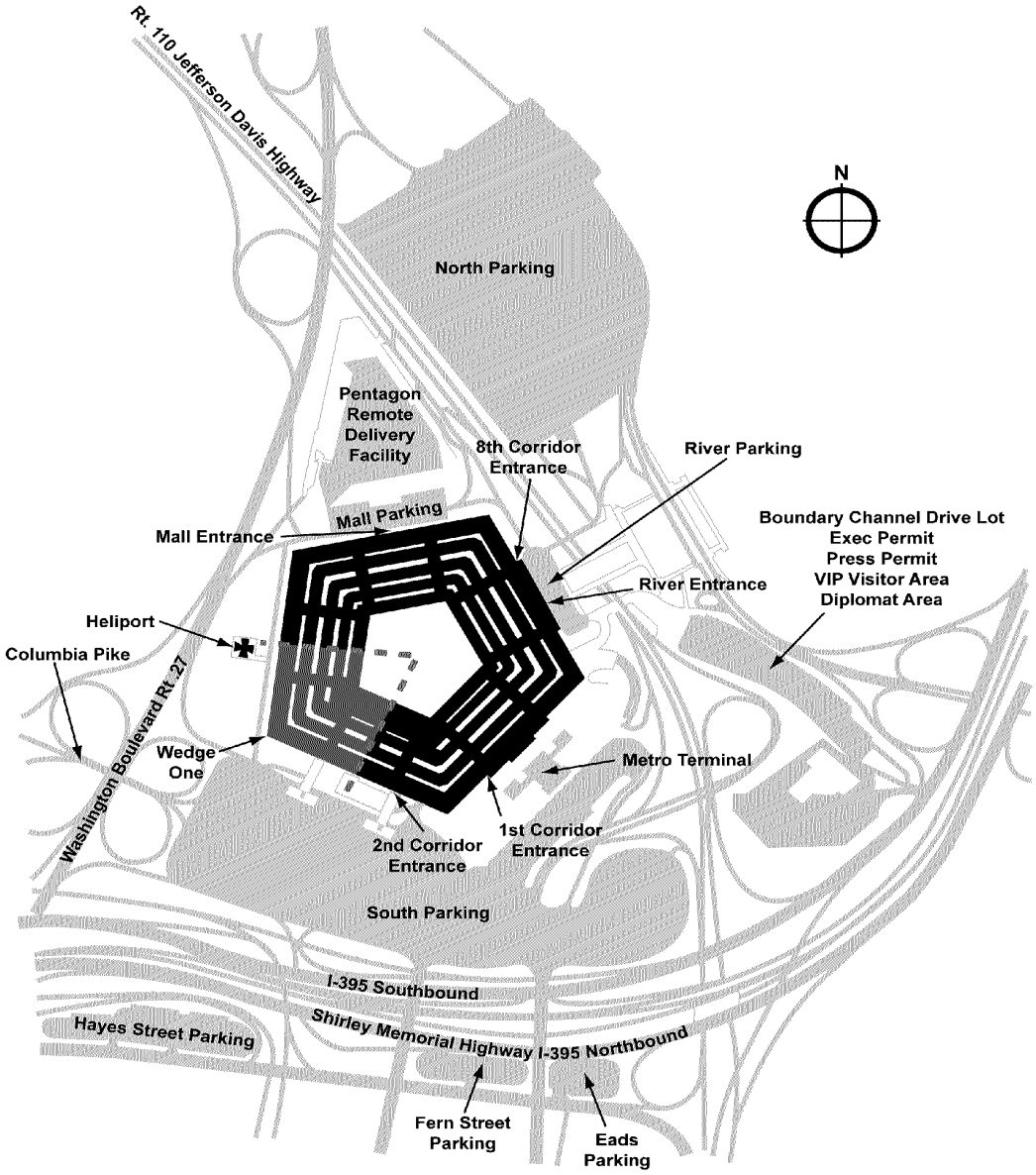


Figure 2. Pentagon ingress and egress and completed Wedge One.

September 11, 2001

On September 11, 2001, the citizens of the Washington Metropolitan Area awoke to a bright, clear morning. By 8:00 a.m., the Tuesday morning commute was well under way. At Washington Dulles International Airport, passengers were boarding American Airlines Flight #77 for the morning departure en route to Los Angeles, CA. The Boeing 757 is a large airliner with a typical transcontinental passenger capacity of 243. Its maximum takeoff weight exceeds 270,000 pounds, including 11,466 gallons of jet fuel. The cruising speed of the Boeing 757 is 475 miles per hour.

At 8:10 a.m., American Airlines Flight #77 took off from Washington Dulles International Airport carrying 58 passengers and a crew of 6. It headed west across Virginia and West Virginia, making an unscheduled left turn at the Ohio-Kentucky border. At 9:03 a.m., air traffic controllers lost contact with the airliner.

At 9:37 a.m., in Arlington County, Captain Steve McCoy and the crew of ACFD Engine 101 were en route to a training session in Crystal City, traveling north on Interstate 395. Their conversation about the World Trade Center attack earlier that morning was interrupted by the sight and sound of a commercial airliner in steep descent, banking sharply to its right before disappearing beyond the horizon. At the same time, ACPD Corporal Barry Foust and Officer Richard Cox, on patrol in south Arlington County, saw a large American Airlines aircraft in a steep dive and on a collision course with the Pentagon.

At 9:38 a.m., American Airlines Flight #77 crashed into the west side of the Pentagon, just beyond the heliport. It was traveling at a speed of about 400 miles per hour, accelerating with close to its full complement of fuel at the time of impact.

The destruction caused by the attack was immediate and catastrophic. The 270,000 pounds of metal and jet fuel hurtling into the solid mass of the Pentagon is the equivalent in weight of a diesel train locomotive, except it is traveling at more than 400 miles per hour. More than 600,000 airframe bolts and rivets and 60 miles of wire were instantly transformed into white-hot shrapnel. The resulting impact, penetration, and burning fuel had catastrophic effects to the five floors and three rings in and around Pentagon Corridors 4 and 5. (See detailed graphics in Appendix 4.)

This act of evil cost the lives of 189 persons in the Pentagon attack, 184 innocent victims, and the 5 terrorist perpetrators of the criminal attack.

Summary

The successful response to the terrorist attack on the Pentagon can be attributed to the efforts of ordinary men and women performing in extraordinary fashion. These efforts are described throughout this AAR.

For example, fire service veterans like Chief Bob Cornwell and Captain Chuck Gibbs imparted to a new generation of firefighters air supply conservation techniques learned during the past three decades. Tactical unit commanders emphasized accountability and watched carefully over those in their charge as they searched vigilantly for surviving victims. Ms. Dodie Gill, Director of Employee Support, and her colleagues were onsite at the Pentagon within 3 hours of the attack, demonstrating that taking care to the firefighter is as important as taking care of the firefighter. Captain Lewis Cooper and Captain Mike Kilby leveraged the experience of Captain Dean Cox and his Fairfax County Fire and Rescue Department logistics team to create a superb logistics function.

With less than 24 hours on his new job as Emergency Operations Center (EOC) coordinator, Captain Penn integrated the resources of Arlington County in support of the tactical operation at the Pentagon. FBI Supervisory Special Agent (SSA) Jim Rice was undergoing chemotherapy treatments but never missed a moment of his 12-hour evidence recovery shifts. The partnership between the FBI and the ACFD was formed in advance through the initiative of Special Agent Chris Combs; it is a model that every metropolitan area should emulate. Those partnerships forged prior to the heat of battle proved invaluable. Ironically, Special Agent Combs, a former New York firefighter, lost two cousins during the response to the terrorist attacks on the World Trade Center.

An anonymous relay team of drivers transported 70 square feet of medical replacement skin, driving 23 hours nonstop from Texas to Washington Hospital Center because airplanes were grounded. Doctors Marion Jordan and James Jeng of Washington Hospital Center, working 14- to 16-hour shifts, performed 112 skin graft operations on 9 patients in 3 weeks. These and other heroes went quietly about their work with little notice.

Neighboring jurisdictions rushed to the aid of ACFD without hesitation. The first action of Alexandria's Chief Tom Hawkins was to send a battalion chief to Chief Schwartz, the ACFD Incident Commander, to coordinate their support and deliver one simple message, "Anything you need, you've got." That message characterized the attitude of Arlington's partners during the fire and rescue operations.

One can only marvel at the combination of Chief Plaugher's strategic vision, the tactical leadership of Chief Schwartz, the flexibility and breadth of Chief White's capabilities, and the technical competence of the other ACFD chief officers. It is noteworthy that in one of the group debriefing sessions, with no chief officer in the room, a firefighter described, as a major positive finding, the fact that "Our chief officers were extraordinary. They were everywhere, all the time." Given the source, this is a fitting tribute to a gallant group of leaders. Journalist Carol Hymowitz, writing about the events of September 11, observed that "These are the times that make—or break—leaders." Leadership isn't learned in a day; it is learned everyday. Clearly, Arlington County and particularly the ACFD were fortunate to have strong, competent leaders in place on the morning of September 11.

This AAR contains 235 recommendations and lessons learned, each of which must be understood within the context and setting of the Pentagon response. Some specifically apply to a particular response element or activity. Others address overarching issues that apply to Arlington County and other jurisdictions, particularly those in large metropolitan areas. They have not been weighted or prioritized. This is a task best left to those with operational responsibilities and budgetary authority.

The following examples of lessons learned are presented in two categories. The first set of examples describes areas that worked very well and contributed significantly to this successful response. They are models that other jurisdictions should emulate. The second set of examples reflects challenges that were encountered and overcome, which can now be corrected by Arlington County and avoided by others in the future. All the examples summarized here are addressed in greater detail throughout the report.

Capabilities Others Should Emulate

1. ICS and Unified Command: The primary response participants understood the ICS, implemented it effectively, and complied with its provisions. The ACFD, an experienced ICS practitioner, established its command presence literally within minutes of the attack. Other supporting jurisdictions and agencies, with few exceptions, operated seamlessly within the ICS framework. For those organizations and individuals unfamiliar with the ICS and Unified Command, particularly the military, which has its own clearly defined command and control mechanisms, the Incident Commander provided explicit information and guidance early during the response and elicited their full cooperation.

2. Mutual Aid and Outside Support: The management and integration of mutual-aid assets and the coordination and cooperation of agencies at all government echelons, volunteer organizations, and private businesses were outstanding. Public safety organizations and chief administrative officers (CAOs) of nearby jurisdictions lent their support to Arlington County. The response to the Pentagon attack revealed the total scope and magnitude of support available throughout the Washington Metropolitan Area and across the Nation.

3. Arlington County CEMP: The CEMP proved to be what its title implies. It was well thought out, properly maintained, frequently practiced, and effectively implemented. Government leaders were able to quickly marshal the substantial resources of Arlington County in support of the first responders, without interfering with tactical operations. County Board members worked with counterparts in neighboring jurisdictions and elected Federal and State officials to ensure a rapid economic recovery, and they engaged in frequent dialogue with the citizens of Arlington County.

4. Employee Assistance Program (EAP): At the time of the Pentagon attack, Arlington County already had in place an aggressive, well-established EAP offering critical incident stress management (CISM) services to public safety and other county employees. In particular, the ACFD embraced the concept and encouraged all its members to use EAP services. Thus, it is not surprising that

the EAP staff was well-received when they arrived at the incident site within 3 hours of the attack. During the incident response and in followup sessions weeks afterward, the EAP proved invaluable to first responders, their families, and the entire county support network. This is a valuable resource that must be incorporated in response plans.

5. Training, Exercises, and Shared Experiences: The ACFD has long recognized the possibility of a weapons of mass destruction (WMD) terrorist attack in the Washington Metropolitan Area and has pursued an aggressive preparedness program for such an event, including its pioneering work associated with the MMRS. In preparation for anticipated problems associated with the arrival of Y2K, Arlington County government thoroughly exercised the CEMP. In 1998, the FBI Washington Field Office (WFO) established a fire liaison position to work specifically with area fire departments. Washington Metropolitan Area public safety organizations routinely work together on events of national prominence and shared jurisdictional interests, such as presidential inaugural celebrations, Heads of State visits, international conferences such as the periodic International Monetary Fund (IMF) conference, and others. They also regularly participate in frequent training exercises including those hosted by the Pentagon and MDW. All this and more contributed to the successful Pentagon response.

Challenges that Must Be Met

1. Self-Dispatching: Organizations, response units, and individuals proceeding on their own initiative directly to an incident site, without the knowledge and permission of the host jurisdiction and the Incident Commander, complicate the exercise of command, increase the risks faced by bonafide responders, and exacerbate the challenge of accountability. WMD terrorist event response plans should designate preselected and well-marked staging areas. Dispatch instructions should be clear. Law enforcement agencies should be familiar with deployment plans and quickly establish incident site access controls. When identified, self-dispatched resources should be immediately released from the scene, unless incorporated into the Incident Commander's response plan.

2. Fixed and Mobile Command and Control Facilities: Arlington County does not have a facility specifically designed and equipped to support the emergency management functions specified in the CEMP. The conference room currently used as the EOC does not have adequate space and is not configured or properly equipped for that role. The notification and recall capabilities of the Emergency Communications Center are constrained by equipment limitations and there are no protected telephone lines for outside calls when the 9-1-1 lines are saturated. The ACFD does not have a mobile command vehicle and relied on the use of vehicles belonging to other organizations and jurisdictions. The ACPD mobile command unit needs to be replaced or extensively modernized.

3. Communications: Almost all aspects of communications continue to be problematic, from initial notification to tactical operations. Cellular telephones were of little value in the first few hours and cellular priority access service (CPAS) is not provided to emergency responders. Radio channels were initially

oversaturated and interoperability problems among jurisdictions and agencies persist. Even portable radios that are otherwise compatible were sometimes preprogrammed in a fashion that precluded interoperability. Pagers seemed to be the most reliable means of notification when available and used, but most firefighters are not issued pagers. The Arlington County EOC does not have an installed radio capacity and relied on portable radios coincidentally assigned to staff members assigned duties at the EOC.

4. Logistics: Arlington County, like most other jurisdictions, was not logistically prepared for an operation of the duration and magnitude of the Pentagon attack. The ACFD did not have an established logistics function, a centralized supply system, or experience in long-term logistics support. Stock levels of personal protective equipment (PPE), critical high-demand items (such as batteries and breathing apparatus), equipment for reserve vehicles, and medical supplies for EMS units were insufficient for sustained operations. These challenges were overcome at the Pentagon with the aid of the more experienced Fairfax County Fire and Rescue Department logistics staff. A stronger standing capacity, however, is needed for a jurisdiction the size of Arlington County.

5. Hospital Coordination: Communications and coordination were deficient between EMS control at the incident site and area hospitals receiving injured victims. The coordination difficulties were not simple equipment failures. They represent flaws in the system present on September 11. Regional hospital disaster plans no longer require a Clearinghouse Hospital or other designated communications focal point for the dissemination of patient disposition and treatment information. Thus, hospitals first learned of en route victims when contacted by transporting EMS units, and EMS control reconstructed much of the disposition information by contacting hospitals after the fact. Although the number of victims of the Pentagon attack were fewer than many anticipated, they were not insignificant. An incident with more casualties would have seriously strained the system.

In summary, the response to the September 11 terrorist attack on the Pentagon was successful by any measure. Although the tragic loss of life from this horrific event could not be avoided, it was minimized. Had it not been for the heroic actions of the response force and the military and civilian occupants of the Pentagon, clearly the number of victims would have been much higher. Damage, although severe, was constrained in area and the fire was brought quickly under control. The fact that the response force did not suffer a single fatality or serious injury is testimony to the training, professionalism, and leadership of Arlington County and the response community. County Manager Carlee and Chief Plaugher further validated that leadership by requiring that a full and complete AAR be written so recommendations for improvement and lessons learned will be captured.

Although the response to the September 11, 2001, terrorist attack on the Pentagon is commendable, this AAR conveys 235 recommendations and lessons learned for improving response and rescue capabilities to better meet the challenges of this new threat environment. This important information should be

shared with other jurisdictions around the country so the Nation benefits from Arlington County's experience, both in preparing for mass casualty terrorist events and responding to them. Although this AAR is written for Arlington County, it should be read by the entire Nation.

Terrorism in any manifestation is an insidious phenomenon. It strikes without warning, often targeting innocent people. It is not intended to defeat an enemy by overwhelming military force, but to undermine and weaken its resolve. If the terrorists intended to weaken our resolve by attacking the Pentagon, they failed. In the words of Arlington County Manager Carlee, "The cowardly and evil effort to terrorize our community and our country served only to unite us more strongly than ever before."

ANNEX A

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INTRODUCTION

This annex describes the activities of the first responders from the Arlington County Fire Department (ACFD) and other supporting jurisdictions and agencies following the September 11, 2001, terrorist attack on the Pentagon.

The ACFD has three operational divisions, each managed by an assistant fire chief, and an Administrative Services Division. The Operations and Emergency Services Division is responsible for implementing the Department's Life Safety, Emergency Medical, and Fire and Environmental Protection functions and for the training associated with those functions. The Technical Services Division is responsible for Apparatus and Equipment (A&E); the Fire Training Academy; Facilities Management; Hazardous Materials (HazMat) regulation and response; Emergency Preparedness; Wellness and Safety; Telecommunications; Logistics; and support for the ACFD's portion of the Metropolitan Medical Response System (MMRS). The Fire Prevention and Community Services Division provides fire safety educational services to civic organizations, school children, businesses, hotels and motels, medical facilities in the county, and to county employees. It also reviews and evaluates building evacuation plans and coordinates various fire safety programs. The Administrative Services Division includes human resource management, ambulance billing and collection services, special projects, and administrative and clerical support services.

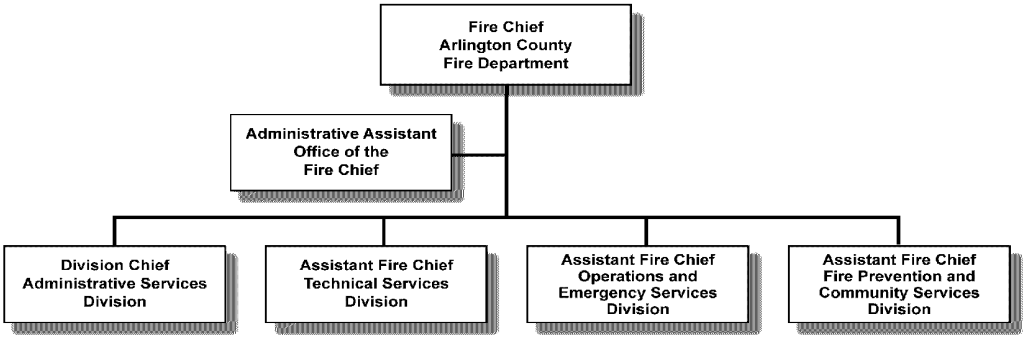


Figure A-1. ACFD organization.

The ACFD is a fully integrated fire and Emergency Medical Services (EMS) response organization. It employs 266 uniformed career firefighters and paramedics and 13 civilian staff members. Its mission is to eliminate threats to the lives, safety, and property of the Arlington community through education, prevention, and effective response to fire, medical, and environmental emergencies. There are 10 fire stations located throughout the county. (See Figure A-2.) During the past year, the ACFD responded to 23,619 emergency calls. Its 60 paramedics are assigned to 5 full-time and 2 peak-time EMS units, and 1 medic-capable engine. The ACFD operates with a minimum emergency medical staffing requirement for each of its 3 shifts of 15

paramedics during the day and 11 at night. Paramedics are able to assess a patient's condition; manage respiratory, cardiac, and trauma emergencies; administer intravenous fluids; use manual defibrillators; administer drugs; and perform other emergency procedures. Emergency medical technicians are called upon to respond to emergencies ranging from childbirth to automobile accidents to violence involving firearms and other weapons, and now terrorism. In addition, all ACFD firefighters are certified emergency medical technician-basic.

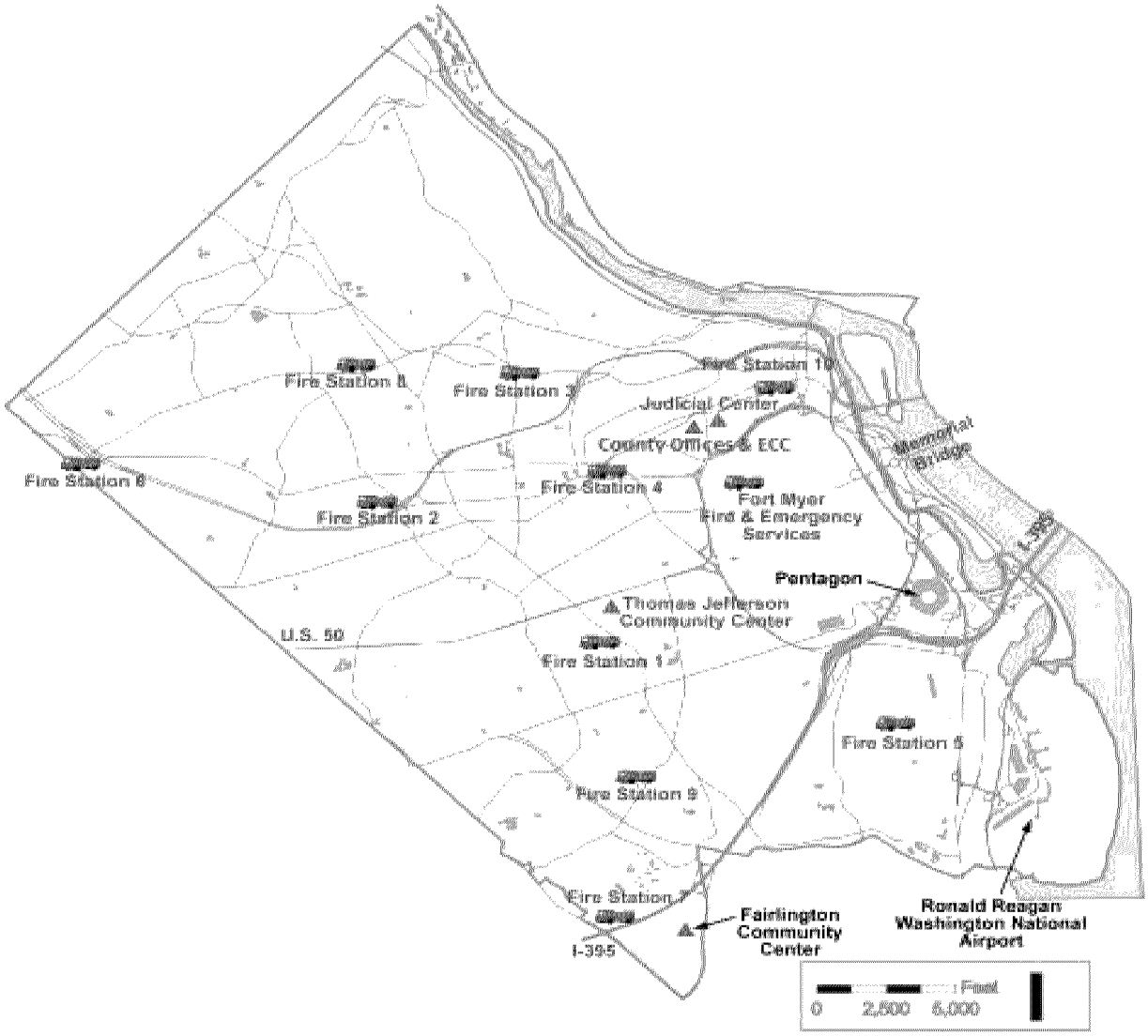


Figure A-2. Arlington County fire stations.

The ACFD is recognized as a highly professional organization and is one of only three fire departments in Virginia to hold a Class 2 Rating from the Insurance Services Organization, lowering insurance costs for homeowners and businesses. This is the highest rating received by Virginia fire departments.

This Fire Department Operations Annex includes information gathered from responders through debriefings, interviews, survey instruments, and by reviewing plans, documents, and transaction records. It is organized into eight sections. Each section describes activities related to a specific functional category. Those categories are: (1) Initial Response; (2) Command, Coordination, and the Incident Command System; (3) Communications; (4) Recall and Staffing; (5) Mutual-Aid and Outside Support; (6) Logistics; (7) Site Safety, Security, and Personnel Accountability; and (8) Planning, Training, and Preparedness.

The information in each of the eight sections is presented in three parts. First, a series of observations describes the nature of activities within the specific functional category, for example, Initial Response. The observations are followed by a set of findings reflecting the information gathered from responders in debriefings, interviews, and survey responses. Finally, each section includes a number of recommendations and lessons learned that are derived from the findings. In all, Annex A includes 111 recommendations and lessons learned.

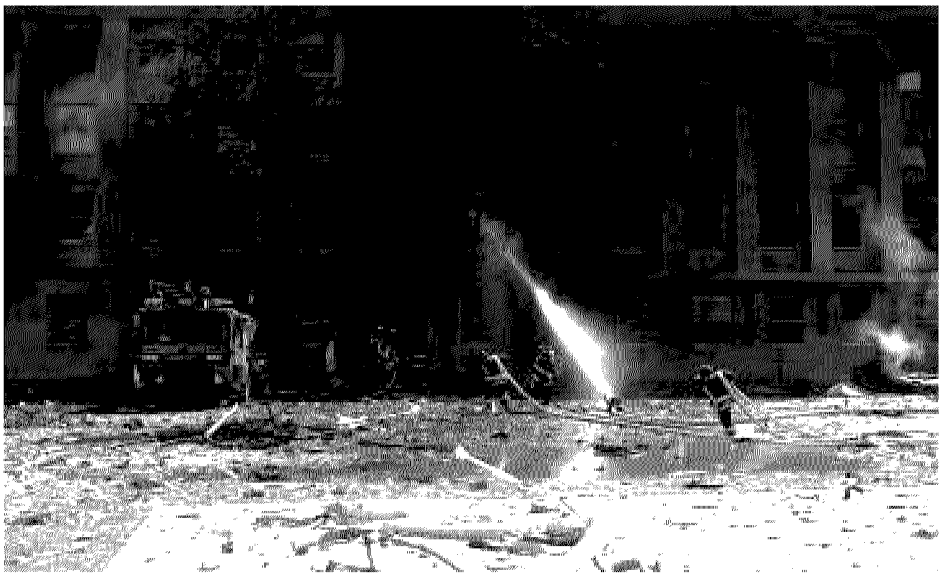
SECTION 1: INITIAL RESPONSE

Observations

The only thing special about the morning of September 11, 2001, was the spectacular fall weather across the Washington Metropolitan Area. In Arlington County, the 67 firefighters and emergency medical technicians of the fire department's "B" shift were staffing the county's 10 neighborhood fire stations. By 8:30 a.m., training classes at the Arlington County Fire Training Academy were in full swing. Other ACFD personnel were engaged in meetings in the District of Columbia, preparing for the upcoming International Monetary Fund (IMF) conference. Several Arlington County chief officers were at a county-sponsored management class at the Fairlington Community Center. At 8:45 a.m., when American Airlines Flight #11 slammed into the north tower of New York City's World Trade Center, it was abundantly clear this would be a day like no other. At 9:06 a.m., United Airlines Flight #175 crashed into the World Trade Center's south tower, revealing the true nature of this unprecedented horror. A brutal, mind-numbing terrorist attack was under way against the United States.

In Arlington County, Captain Steve McCoy and the crew of Engine 101 were en route to a training session in Crystal City, traveling north on Interstate 395. Their conversation about the World Trade Center attack was interrupted by the sight of a commercial airliner in steep descent, banking sharply to its right before disappearing beyond the horizon. At 9:38 a.m., shortly after American Airlines Flight #77 disappeared from sight, a tremendous explosion preceded a massive plume of smoke and fire. Unable to pinpoint the precise location, Captain McCoy immediately radioed the Arlington County Emergency Communications Center (ECC), reporting an airplane crash in the vicinity of the 14th Street Bridge or in Crystal City. Aware of the World Trade Center attack, Captain McCoy also advised that the Federal Bureau of Investigation (FBI) should be notified, since this was a possible terrorist attack. Hearing the radio message, fire and rescue units from Arlington County and elsewhere began to respond, self-dispatching from stations or diverting from other destinations.

At 9:38 a.m. on September 11, only one fire crew, Foam 161 of the Fort Myer Fire Department, knew the exact location of the crash site. Captain Dennis Gilroy and his team were already on station at the Pentagon when Flight #77 slammed into it, just beyond the heliport. Foam 161 caught fire and suffered a flat tire from flying debris. Firefighters Mark Skipper and Alan Wallace were outside the vehicle at impact and received burns and lacerations. Recovering from the initial shock, they began helping victims climb out of the Pentagon's first floor windows. Captain Gilroy called the Fort Myer Fire Department, reporting for the first time the actual location of the crash.



Fort Myer Foam 161.

Help was already on the way from several directions as units sped toward the source of the smoke plume, not toward a specific street address. ACFD Truck 105 reached the scene first, followed shortly by fire and medical units from several Arlington County stations.

Smoke billows from the Pentagon.

In the meantime, at the FBI Washington Field Office (WFO), Special Agent-in-Charge (SAC) Arthur Eberhart was putting in motion the steps necessary to support New York City. Of WFO's four senior leaders, he was the only one present at headquarters that morning. Upon learning of the World Trade Center crashes, SAC Eberhart activated the WFO Command Center. Members of the WFO National Capital Response Squad (NCRS) were paged and instructed to report immediately to headquarters. Supervisory Special Agent (SSA) Jim Rice, the NCRS leader, was at the FBI WFO Command Center on the telephone with Mr. Larry Cirutti of the Military District of Washington (MDW) at the Pentagon when a monitored District of Columbia police radio transmission reported an explosion at the Pentagon. Mr. Cirutti told SSA Rice a helicopter must have "slid off the helipad" into the building. Special Agent Chris Combs, the NCRS Fire Service Liaison, was teaching a class at the District of Columbia Fire Academy when he received his page. While en route to the WFO Headquarters, he heard a news report of the Pentagon attack and proceeded directly to the Pentagon.

Meanwhile, at the Metropolitan Washington Airports Authority (MWAA) Fire Department at Ronald Reagan Washington National Airport, Captain Michael Defina was investigating an incident at Terminal B when he heard the impact and saw the smoke rising in the distance. He called Fire Communications and was advised of a report of a Boeing 757 crash off the end of Runway 1-19. That was quickly amended, identifying the Pentagon as the crash site. The MWAA contacted the Arlington ECC and was directed to respond to the Pentagon. They did so with substantial resources: a rescue engine, two foam units, two mass casualty units, a mini-pumper, and a command vehicle. Because MWAA has authority to respond automatically to an airplane crash within 5 miles of the airport, two heavy rescue units had already self-dispatched to the Pentagon.

ACFD's Training Officer Captain Chuck Gibbs reached the incident site within the first 3 minutes, followed by Battalion Chief Bob Cornwell, who assumed initial Incident Command responsibilities. Those duties were quickly assumed by Assistant Fire Chief for Operations James Schwartz, who assigned Battalion Chief Cornwell, a 35-year veteran firefighter, to lead fire suppression efforts inside the building. Captain Gibbs commanded the River Division. Special Agent Combs arrived moments after Chief Schwartz. The partnership between Chief Schwartz and Special Agent Combs, who served as FBI agency representative to the Incident Commander, proved invaluable in the days ahead.

ACFD Captain Edward Blunt also arrived at the Pentagon within minutes of the crash and assumed EMS Control. He immediately contacted the ECC. Captain Blunt requested and immediately received a separate EMS operations channel. He also asked for 20 medic units, 2 buses, and a command vehicle (EMS Supervisor Vehicle 112) to support the EMS response. Captain Blunt designated the field adjacent to Washington Boulevard (Route 27) as the treatment area, and asked the Arlington County Police Department (ACPD) patrol units onscene to clear Washington Boulevard to create north and south access for emergency response traffic. Captain Alan Dorn arrived shortly after Captain Blunt, and was

assigned as Triage Officer. Together, Captains Blunt and Dorn began working with military medical personnel who volunteered to help set up triage areas.

Initially, medical units staged in the Pentagon South Parking Lot, adjacent to Route 110, until called forward to the EMS sector on Route 27. By 9:50 a.m., six ACFD EMS units had already arrived at the incident site (M-102, M-104, M-105, M-106, M-109, and M-110). M-101, Engine 103, and an ACFD Reserve Medic Unit quickly joined them. Two additional ACFD Reserve Medic Units (RM-111 and RM-112) arrived next and were directed to provide EMS support at the Pentagon's Center Courtyard.

At 9:50 a.m., the ECC advised Captain Blunt that Virginia Hospital Center - Arlington, Inova Fairfax Hospital, and Washington Hospital Center were prepared to accept as many victims as needed.

The first ACFD personnel had arrived at the Pentagon within 2 minutes of the attack. ACFD and mutual-aid medical personnel began aiding victims immediately. Within 4 minutes of the attack, the ACFD had established its command presence. MWAA fire and medical units were on the scene and the first contingent of the FBI's NCRS had arrived within 5 minutes of impact. Three major Washington Metropolitan Area hospitals were ready to receive injured victims 12 minutes after the attack. By 10:00 a.m. on September 11, most of the ACFD duty shift was engaged at the Pentagon.

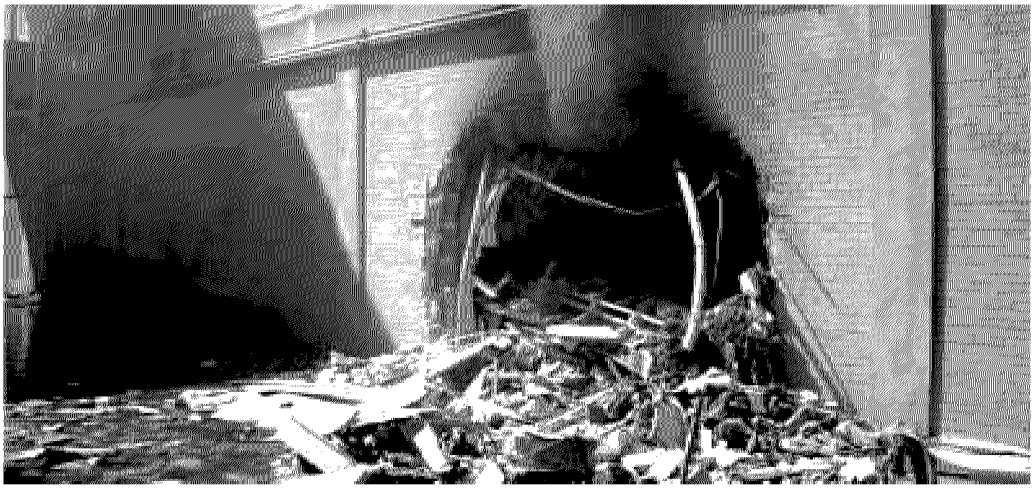
Findings

The Pentagon is a highly visible and significant symbolic target, a structural fortress, populated by a large and highly disciplined workforce. Ongoing Pentagon renovation work lowered the number of potential victims. A portion of the impacted area was not yet fully repopulated following recently completed upgrades.

The massive size of the Pentagon and the complexity of its various rings, corridors, and floors compounded the challenge of the response force. First of all, it distorted the perception of the task at hand. It is true that fire damage was contained to a relatively small area, but it was a relatively small area in one of the largest business complexes in the world. This was office space built to accommodate a substantial workforce, with all the accompanying common space, meeting and conference rooms, and other support facilities.

View of external damage.

To those watching on television, or even from the Pentagon's South Parking Lot, the gash created by the Boeing 757 airliner was large, but it affected a specific area of only two of the Pentagon's five Wedges. Neither the depth of the incursion nor the massive devastation inside the building was readily apparent as flames burned behind blast-proof windows. Huge heaps of rubble and burning debris littered with the bodies and body parts of 188 victims covered an area the size of a modern shopping mall. The 189th victim subsequently died at Washington Hospital Center; all other injured victims transported to area hospitals survived. (See Appendix 4, Pentagon Penetration Damage Diagrams.) Flight #77 penetrated the outer wall of the Pentagon's E Ring and the damage extended all the way through the inner wall of the C Ring, a distance of approximately 285 feet.



Penetration through the inner wall of the Pentagon's C Ring.

Several factors conspired favorably to support the firefighters on September 11. First of all, the weather was clear and dry and, for the most part, remained so throughout the next 10 days. Rain or heavy winds would have severely complicated the circumstances.

In addition, as a result of the congruence of scheduled meetings and training activities, the ACFD leadership team was gathered nearby and able to respond quickly. These fortuitous circumstances facilitated the immediate availability of Arlington County's most experienced fire and medical services command personnel. Incident Command was established onsite within minutes of the attack and its authority was never challenged. The preparedness and ability of the ACFD leadership to take charge reflects exceptional training and a remarkable level of competence.

Internal damage to the Pentagon.

Additionally, just 1 minute before the Pentagon crash, in response to a 9-1-1 telephone call at 9:37 a.m., the ECC dispatched several units to an apartment fire at 1003 Wilson Boulevard in Rosslyn. Because it was located in a high-rise building, it was a substantial dispatch involving nine different fire and medical service units. Engine 103 reached the Rosslyn scene first and radioed that the apartment fire was out. Thus, by sheer coincidence, there were a significant number of units already on the road near the Pentagon at the time of the attack.

Furthermore, the fact that so many fire and rescue units from Arlington County and elsewhere self-dispatched immediately to the scene enabled fire suppression to commence without hesitation. This quick response was due in part to

continuous national television and radio news coverage, which augmented the Arlington County ECC's limited notification capabilities.

This rapid response also enabled the early provision of triage and treatment services for victims emerging from the Pentagon. Medical units from the ACFD and other jurisdictions treated and transported patients quickly, saving all viable victims, thanks to the support of military medical staff and the response of area hospitals.

However, some of these apparently favorable factors also had detrimental effects. Although self-dispatching quickened the arrival of a substantial number of fire, rescue, and medical units, many arrived haphazardly. The occupants of those vehicles were singularly intent on saving victims and attacking the fire. Police engaged in area traffic control were understandably reluctant to delay emergency vehicles descending on the scene with lights flashing and sirens blaring.

Deploying EMS units from other jurisdictions, particularly self-dispatched units, found it easy to bypass the staging area and proceed directly to the response site. Some victims flagged down EMS units before they reached the staging area. The crew from one Alexandria unit reported that it independently performed triage and treatment in the Pentagon South Parking Lot to assist five severely burned victims.

As a result, although the ACFD instituted Incident Command procedures very early on, they still faced the monumental challenge of gaining control of the resources already onsite and those arriving minute-by-minute.

Captain Jeff Liebold, working at the Incident Command Post (ICP), was tasked to determine what units were onsite and where they were working. Because radio communications were overloaded and ineffective, Captain Liebold sent two firefighters on foot to record the identification number and location of every piece of equipment on the Pentagon grounds. In the first few hours, foot messengers at times proved to be the most reliable means of communicating.

Additionally, the uncontrolled influx of fire and rescue personnel had important accountability implications. For example, Captain Gibbs established very effective entrance and exit controls at the Pentagon's Corridor 5 entrance, near the impact point. However, firefighters and other personnel came and went from other Pentagon entrances sometimes with little or no control. Thus, had there been a second attack, as occurred at the World Trade Center, it would have been virtually impossible for the Incident Commander to determine quickly who might have been lost.

The unique design of the Pentagon hid from view activities at the Center Courtyard in the middle of the complex. Battalion Chief Jerome Smith was assigned responsibility for fire suppression from the Center Courtyard, with units from the District of Columbia and ACFD. His mission was to prevent the fire from breaching the B Ring. Upon reaching the Center Courtyard, Battalion Chief

Smith found the area in turmoil. More than 400 building occupants crowded the Center Courtyard. Others leapt from the upper floors, as colleagues armed with fire extinguishers attempted to extinguish the flames consuming burning comrades.

EMS was also challenged by the unique design and the sheer size of the Pentagon; therefore, a complete and accurate sizeup of the incident site was not immediately performed. Those engaged in rescue efforts on the impacted west side of the Pentagon had little idea what was taking place at other locations, posing problems in establishing effective EMS Control. Although the central focus was the impact area on the west side of the Pentagon, not all the surviving victims evacuated in that direction. Some surviving victims found private ambulances or other means of transportation to area treatment facilities. Many reported to the DiLorenzo TRICARE Health Clinic (DTHC), located inside the Pentagon, close to the north entrance. The DTHC also set up EMS stations in the Center Courtyard and in the North Parking Lot.

Arlington County EMS unit onsite.

The ACFD EMS Control was not initially aware of the DTHC activities. The DTHC did not transmit patient disposition information to EMS Control. Thus, triage, treatment, and transport activities of the DTHC were not coordinated with EMS Control. Without a communications interface, important information on patient disposition was not captured. Had there been further catastrophe, it would have been next to impossible to ascertain a total victim count and identify Pentagon casualties, including those reporting to the DTHC treatment stations. As a result, records had to be reconstructed after the fact using information collected from hospitals and clinics to supplement information gathered onsite.

Assistant Chief John White arrived at approximately 9:55 a.m., and was directed by Chief Schwartz to command the EMS Branch. Chief Schwartz advised him that Captains Dorn and Blunt were assessing and establishing mass triage sites at the traffic circle area of Washington Boulevard and westbound Columbia Pike. Captain Dorn organized responders and military volunteers, while Captain Blunt performed forward assessment. (See Figure A-3.)

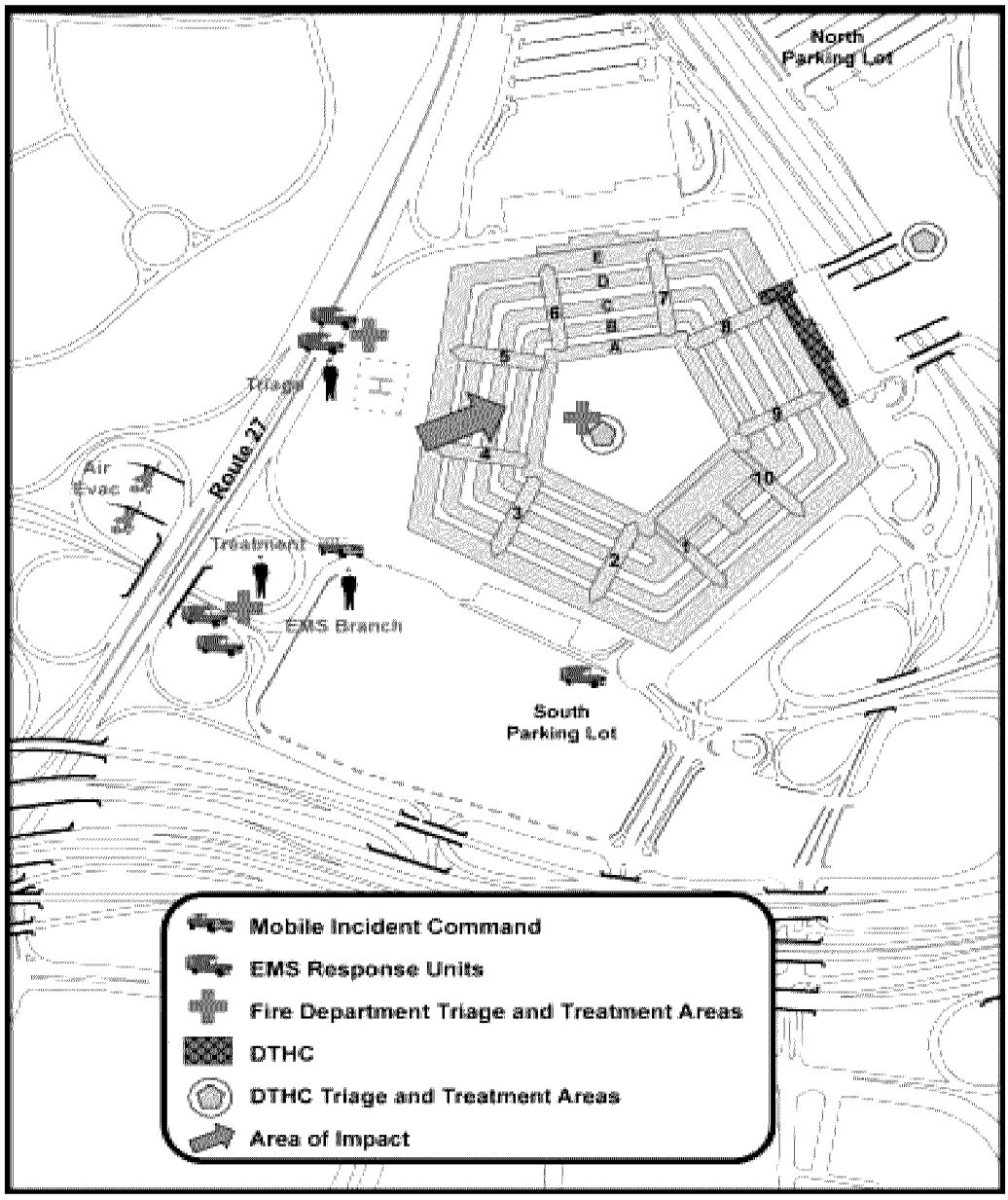


Figure A-3. Initial triage and treatment sites.

Chief White instructed Captain Dorn to continue making preparations for casualties in the designated triage and treatment areas and to use the EMS units located along Route 27. ACFD triage and treatment sectors were established using ACFD assets, mutual-aid responders and military emergency medical technicians, nurses, and physicians. The military participants were receptive to direction and readily deferred to EMS officers. A military nurse equipped with a radio was able to communicate with the Defense Protective Service (DPS) and DTHC aid stations in the Pentagon.

Chief White then met with Captain Blunt along Route 27 adjacent to the Pentagon heliport for a forward assessment report. Chief White asked him for a count of the casualties in his area by triage designators: red (IMMEDIATE: Life Threatening Injury); yellow (DELAYED: Serious, Not Life Threatening); and green (MINOR: Ambulatory).

At approximately 10:15 a.m., Chief Schwartz ordered the immediate evacuation of the incident site. The FBI had warned him that a second hijacked airliner was flying on a course toward the Pentagon and was 20 minutes away. Responders were ordered to take shelter beneath one of the nearby highway overpasses. Chief White instructed Captain Blunt to "load and go," transporting as many patients as possible out of the area. The first wave of patients was en route to area hospitals within 10 minutes of the evacuation notice and all other personnel were relocated to the Columbia Pike underpass at the South Parking Lot. Medivac helicopters that had responded to the Pentagon incident scene were relocated to a safer place.

Evacuation by helicopter.

At the underpass, Chief White, in coordination with EMS officers and military medical volunteers, made plans to reestablish triage in that area. He designated Captain Dorn as Triage Officer, Captain Blunt as Forward Triage Officer, Chief Glen Butler from the MWAA as Treatment Officer, and Firefighter Paramedic David Hehr as Transportation and Disposition Officer. (See Figure A-4.)

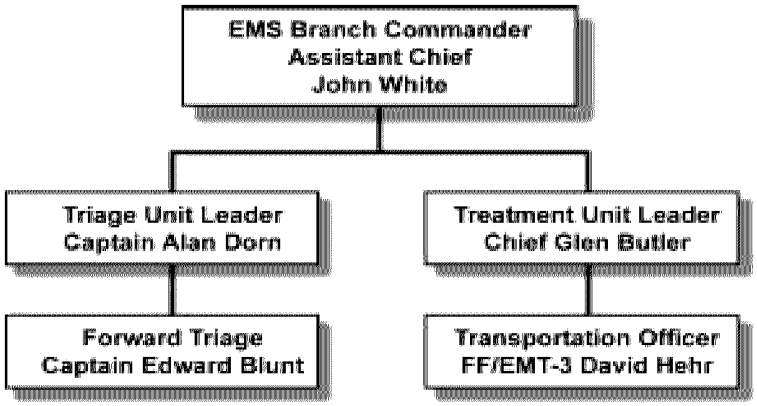


Figure A-4. EMS Branch structure.

Dr. James Vafier, the Alexandria EMS Medical Director, accompanied an EMS unit to the incident site and was assigned a forward assessment role with a position on the sidewalk between Corridors 3 and 4. The plan was for military stretcher-bearers to carry victims extracted by firefighters to Dr. Vafier's position for preliminary assessment. He would then assign them to the appropriate triage and treatment area.

When the all clear was sounded and site evacuation ended, EMS and military responders implemented Chief White's operations plan. (See Figure A-5.)

Instead of the anticipated exodus of Pentagon patients, only 42 injured victims received on-site medical care and were transported to area hospitals. An estimated 100 additional victims were treated for minor injuries.

There are several reasons why the number of victims treated and transported by EMS units was less than anticipated:

- The airliner struck a portion of the Pentagon that had been recently renovated and was not fully occupied, lowering the total number of potential casualties.

- The DTHC inside the Pentagon treated and ordered victims transported both from its facility and from EMS stations set up in the Center Courtyard and near the North Parking Lot.

- The sheer violence of the impact reduced chances of survival. Those who were able to get out did so in the first few minutes.

ACFD EMS units and those of supporting jurisdictions responded quickly and appropriately, treating and, when needed, transporting surviving patients. These rapid and professional actions reduced pain, comforted victims, and saved many lives.

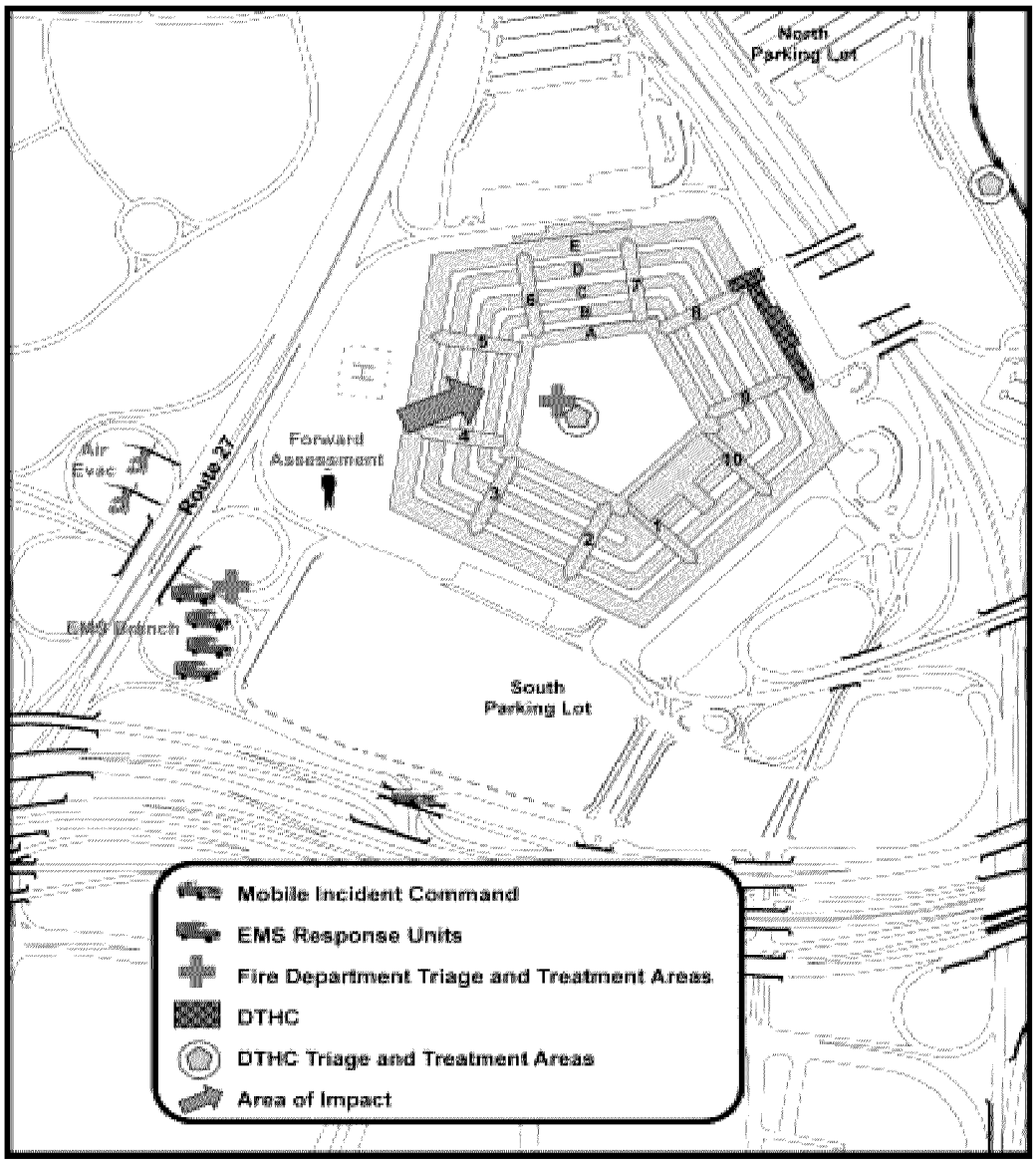


Figure A-5. Post-evacuation triage and treatment sites.

Despite these heroic efforts on the part of Arlington County Fire and EMS personnel, significant shortfalls and challenges emerged from this experience.

During the first 24 hours, it was necessary to evacuate the Pentagon on four separate occasions because of the risk of structural collapse or the threat of additional terrorist attacks. It is difficult to measure the full impact of repeated building evacuations, but it was clearly negative and significant. Each time an evacuation was ordered, firefighters interrupted operations, abandoned equipment, shut off hoses, and ran several hundred yards to protected areas. From there, they had to watch as flames reclaimed the parts of the Pentagon they had just evacuated. On-site emergency medical care of injured victims was also affected and some patients were sent immediately to area hospitals before a complete on-site medical assessment.

The recall of off-duty firefighters and restoration to service of reserve apparatus are subjects covered in detail in Sections 4 and 7 of this report. However, in the context of initial response, it must be noted that the ACFD recall system is seriously flawed. Firefighters returned to work in a timely fashion, but mostly on their own initiative and without clear instructions. Moreover, neither recalled personnel nor reserve apparatus were equipped to sustain the simultaneous engagement of multiple-duty shifts. Replacement personnel often arrived at the incident site without self-contained breathing apparatus (SCBA) and other equipment items.

Some ACFD companies carried only three-person crews. This hampered the speed of initial operations, since companies not engaged in pumping or aerial operations could not be split into 2 two-person teams. Four-person crews would have virtually doubled their capabilities.

Teams of firefighters assigned suppression work on the Pentagon roof had difficulty finding access points from the fifth floor. Neither building engineers nor detailed structural drawings were available to assist them at that location. Captain Robert Swarthout, Incident Safety Officer at the ICP, was in contact with a Pentagon engineer, but that resource was not accessible at the point of fire attack. Firefighters eventually climbed onto a ledge from a fifth-floor window then hoisted themselves onto the roof. Attacking the fire on the roof was particularly difficult. The thick wood-plank inner layer burned out of control, protected by a layer of concrete below and a thick slate roof above. Firefighters cut trenches across the slate roof. It was physically demanding and involved a certain degree of guesswork to breach the roof ahead of a fire that could not be seen. On the second day, September 12, a military representative pointed out to Battalion Chief Randy Gray, the Incident Command Operations Section Chief, the locations of two key communications and operations facilities threatened by the roof fire. The fire was stopped short of those facilities.

Height restrictions limited equipment access along A-E Drive into the Center Courtyard. Eventually, the tiller cab had to be cut off of an ACFD ladder truck so it could support the fire attack from inside the Center Courtyard.

In the area of EMS, patient accountability was deficient because triage tags were not used to document the care and disposition of victims. By not using triage tags, EMS providers were unable to provide accurate progress reports or retain information for legal documentation. EMS data was, for the most part, gathered afterward, in consultation with supporting jurisdictions, area treatment facilities, and the DTHC. It was fortunate that the number of patients was not greater or this would have been a critical deficiency.

Those EMS providers who were flagged down by victims before reaching the treatment sectors often found themselves detached and without support from the EMS Branch, which could have been problematic had there been more casualties.

Communications between EMS Control and DTHC were deficient. Contact should have been established early by DTHC and information exchanged continuously as stipulated in the existing memorandum of understanding (MOU). With the urgency of saving lives in the immediate aftermath of a massive terrorist attack, this did not occur. Many victims requiring medical care, most noticeably those treated at the DTHC and its impromptu EMS stations, were transported by means other than EMS units. Other victims found their own way to care facilities.

Many mutual-aid responders were unfamiliar with the Pentagon. Some did not know how to identify their locations and communicate them accurately to other responders.

The training, discipline, and character of the military personnel working in the Pentagon proved invaluable in many ways. Yet, it also caused unique control problems as service members repeatedly attempted to enter the burning building in search of missing colleagues. In some instances, ACFD personnel had to intervene and reverse the direction of military personnel moving toward the impacted area. The only visible means of protection for some were filter masks obtained from the Pentagon medical clinic.

Despite these difficulties, the initial response to the Pentagon attack was successful. All surviving seriously injured building occupants were rescued and hundreds of additional potential victims escaped safely. Fire suppression in the first 12 hours contained the damage without interrupting the critical worldwide military command and control activities of the Department of Defense (DoD) during a major national security emergency. Despite the magnitude, complexity, and duration of operations, there were no fatalities or serious injuries among fire and rescue personnel. This can be attributed in large part to the skill level in core competencies, professionalism, training, and teamwork of ACFD personnel and their counterparts in supporting jurisdictions.

Nevertheless, important lessons were learned that will better prepare Arlington County and other jurisdictions for future events of similar scope. The ACFD has a standing policy of integrating lessons learned into department plans and procedures. This After-Action Report reflects that policy.

Recommendations and Lessons Learned

The ECC must provide immediate and complete deployment information to emergency response units. Every firefighter and EMS responder should have a pager to receive dispatch notices both on and off shift. (FD-001)

During potential mass casualty events, all involved dispatch centers must make a concerted effort to provide consistent and accurate direction to emergency responders. (FD-002)

Deploying units must strictly adhere to instructions from the ECC until arriving at the incident scene and receiving direction from the Incident Commander. (FD-003)

All building entrances and exits at the incident scene must be secured and entry tightly controlled so personnel accountability is not compromised. (FD-004)

Fire and rescue organizations need interoperable radios with effective channel management and communications discipline. They must also plan on expedient alternative means of communications, including, but not limited to, foot messengers. (FD-005)

The ACFD should review fire apparatus staffing levels to ensure the speed of early search and rescue operations and provide for the safety of the crew. (FD-006)

Fire departments must be equipped for sustained operations. Firefighters should not have to rely solely on breathing apparatus or other items taken from colleagues they replace. Additionally, reserve apparatus should have a full complement of equipment stored and secured so they can be quickly placed into service. (FD-007)

In large incidents, the staging area should be located a moderate distance from the scene to establish and maintain a system of accountability. Suitable staging areas should be identified around the county in advance and clearly identified for incoming emergency services units in plans and by the instructions of dispatchers. Entrance from adjoining streets and highways must be tightly controlled by law enforcement personnel who have received specific guidance from the Incident Commander to direct incoming units. (FD-008)

Those engaged in fire suppression and rescue operations in buildings with a potential for collapse need detailed site plans and drawings as well as access to knowledgeable structural engineers. This information must be accessible to those engaged at the point of attack. (FD-009)

Fire and medical responders should receive a detailed orientation on each critical and unique facility in the jurisdiction and have available site drawings and other graphic aids. (FD-010)

EMS must establish treatment and transport control for the entire perimeter to attain control and accountability in mass casualty events. (FD-011)

When responding to an incident as large as that at the Pentagon, EMS personnel must conduct a thorough scene sizeup. All medical treatment facilities, regardless of the provider, must be integrated into a single EMS structure. (FD-012)

The provisions of the existing emergency medical support agreement between the Pentagon and Arlington County should be reviewed by both parties and validated or modified. Other government sites in Arlington County should be surveyed to determine which ones have medical facilities and the extent of their treatment capabilities. (FD-013)

In any casualty situation, triage tags must be used to provide a record documenting medical treatment, narcotics administered, and patient disposition. Triage tags should be used routinely in EMS medical treatment to reinforce their value. (FD-014)

Communications and coordination specified in plans and support agreements between EMS Control and on-scene medical resources of a critical facility (the DTHC in this instance) need to be followed. (FD-015)

Public safety organizations need to prepare for, and practice in advance, fire and rescue operations for critical or unique facilities within assigned jurisdictions:

- Requirements for site information, specially trained personnel, special equipment, and supplies need to be identified in advance and secured for that site. (FD-016)
- Templates for documenting and controlling information need to be prepared, personnel must be trained, and special equipment purchased if necessary. (FD-017)
- Fire suppression plans must include specific procedures for dealing with potential difficulties arising from the structure itself—such as the visibility problems related to the size and shape of the Pentagon. (FD-018)

Information about additional threats to first responders must be disseminated rapidly and decisions regarding site evacuation made without hesitation. In an incident that is clearly the work of terrorists, every attempt must be made to validate the accuracy of threat reports to avoid unnecessary interruptions to fire suppression and rescue operations and their debilitating physical and mental effects. (FD-019)

Other jurisdictions should emulate the ACFD and integrate significant lessons learned during incident response operations into established fire and rescue plans, training exercises, and mutual-aid agreements. (FD-020)

SECTION 2: COMMAND, COORDINATION, AND THE INCIDENT COMMAND SYSTEM

Observations

In the event of a fire, even one of significant size, the issue of "who's in charge" is usually straightforward. The fire department that owns the jurisdiction owns the scene until the fire is extinguished or brought under control. All other organizations support and are under the tactical control of the fire department's designated Incident Commander. Once the fire is out, command might be transferred to a law enforcement agency if, for example, arson or some other criminal act is suspected. The fire scene would then become a crime scene.

On September 11, terrorists attacked the Pentagon, not an ordinary building. It is a structure of imposing size that houses critical national security functions. To begin with, the Pentagon is situated in Arlington County, VA, but it is a U.S. military facility under direct control of the Secretary of Defense. Building entry is restricted and controlled by its own law enforcement organization, the DPS. The fire station at the Pentagon heliport is operated by the Fort Myer Fire Department.

Another complication was the nature of the attack itself. Following on the heels of the attacks on the World Trade Center in New York, it was clear this was a terrorist action. Under the terms of Presidential Decision Directive (PDD)-39, acts of terrorism are the exclusive domain of the Department of Justice (DOJ) and the FBI. This major fire incident, the jurisdictional responsibility of the ACFD, occurred because of a terrorist attack, thereby rendering the site a crime scene, the responsibility of the FBI. These complex jurisdictional and organizational relationships tested the coordination and relationships of everyone involved.

Thus, the Pentagon attack required a fully coordinated response by the ACFD Incident Commander, the FBI On-Scene Commander, and the Commanding General of the MDW representing the DoD. From the moment Special Agent Combs reported to Chief Schwartz as the FBI representative and initial FBI On-Scene Commander, the collaboration and cooperation between the FBI and ACFD was under way. The FBI carefully respected the command primacy of the ACFD while it retrieved evidence during the 10-day fire and rescue phase. The FBI assumed command of the scene from the ACFD on September 21. The foundation for this relationship had formed long before the attack on the Pentagon. Special Agent Combs, a former New York firefighter, had worked routinely with every Washington Metropolitan Area fire department. He had taught classes at area fire academies and met regularly with the fire community leadership. Similarly, Major General James Jackson of the MDW placed his formidable resources in support of the ACFD Incident Command and the FBI until control was returned to the DoD on September 28.

Long before this event, the ACFD and other area fire departments had embraced the National Interagency Incident Management System (NIIMS) Incident

Command System (ICS). In March 2001, the Washington area Council of Governments adopted the NIIMS ICS model. Thus, there is a common understanding of basic working relationships among local jurisdictions. However, establishing and maintaining command of the response to the Pentagon attack was daunting. There were thousands of people and hundreds of equipment apparatus from more than a dozen different jurisdictions, as well as many Federal, State, and Arlington County government agencies, and scores of volunteer organizations, businesses, and individuals. This understandably challenged the leadership of a fire department that usually directs the efforts of some 260 uniformed personnel. Although the ACFD performed well in responding to the terrorist attack on the Pentagon, the actual experience of coordinating the multifaceted response proved significantly more challenging than previously envisioned.

Findings

When Chief Edward Plaugher first arrived at the Pentagon shortly after the attack, he decided not to personally assume Incident Command, and delegated that task to Chief Schwartz. Chief Plaugher recognized he would be more valuable as a free agent, buffering the command structure from outside distractions, such as the media, and directing his attention to support requiring his personal intervention. This proved to be a fortuitous decision.

A tiered command structure evolved during the first several hours. Chief Schwartz directed fire and rescue operations at the ICP. Around midday, he established an ICS operations section at the Pentagon heliport, from which day-to-day firefighting and rescue efforts were planned and executed. Chief Gray, a second-generation ACFD Firefighter, led the Operations Section supported by Chief Cornwell and Captain Gibbs. Battalion Chief Tom Hurlihy, from the District of Columbia, was later added to the operations team.

At about 1:00 p.m., Chief Schwartz learned that a task force led by Loudoun County Chief Jack Brown had arrived at Fire Station 1. He asked Chief Brown, formerly with the Fairfax County Fire and Rescue Department and a long-time colleague, to report to the ICP and lead the Planning Section. When the Fairfax County Urban Search and Rescue (US&R) Team deployed by the Federal Emergency Management Agency (FEMA) arrived about 2:00 p.m., the Incident Commander recognized that these very special resources would require considerable attention and asked Chief Brown to serve as their liaison. A Logistics Section was added later that day. It ramped up and was fully operational on the morning of September 12. Functional branches were established for fire suppression at the impact area (River Division), the Center Courtyard (A-E Division), and medical treatment (South Parking Lot).

Away from the incident scene, Battalion Chief George Lyon designated Fire Station 1 as a Field Operations Center. It was there that replacement personnel and equipment were organized and dispatched to the Pentagon.

ACFD Incident Command Operations Sector with Chief Randy Gray on the left and Safety Officer Captain Swarthout seated.

The Incident Commander also called for deployment of the Fairfax and Montgomery County US&R teams and two task forces from the National Medical Response Team (NMRT). Chief Plaugher directed Chief Schwartz to increase the number of requested US&R teams to four. US&R teams from Fairfax and Montgomery Counties were first on the scene, followed by teams from Virginia Beach and Tennessee. Later, a replacement US&R team deployed from New Mexico. The MDW Technical Rescue Team (TRT) stationed at Fort Belvoir also deployed.

The ACFD ICS also had to interface with the Arlington County Emergency Operations Center (EOC), located in the county government complex. The EOC is responsible for policy guidance and resource support. EOC personnel and equipment were assembled by 10:30 a.m. and, at 12:30 p.m., County Manager Ron Carlee convened the first Emergency Management Team meeting. (See Figure A-6.)

The FBI deployed both the Joint Terrorism Task Force (JTTF) and the NCRS. Special Agent Combs established the FBI initial command presence with the ACFD Incident Command. The collaboration and cooperation between the FBI and ACFD was remarkable. The FBI Evidence Recovery Team began arriving before 10:00 a.m. and set up in a grassy area a short distance from the heliport. Because of the extremely congested traffic conditions, it took several hours for the entire FBI contingent to negotiate the route from the District of Columbia to the Pentagon.

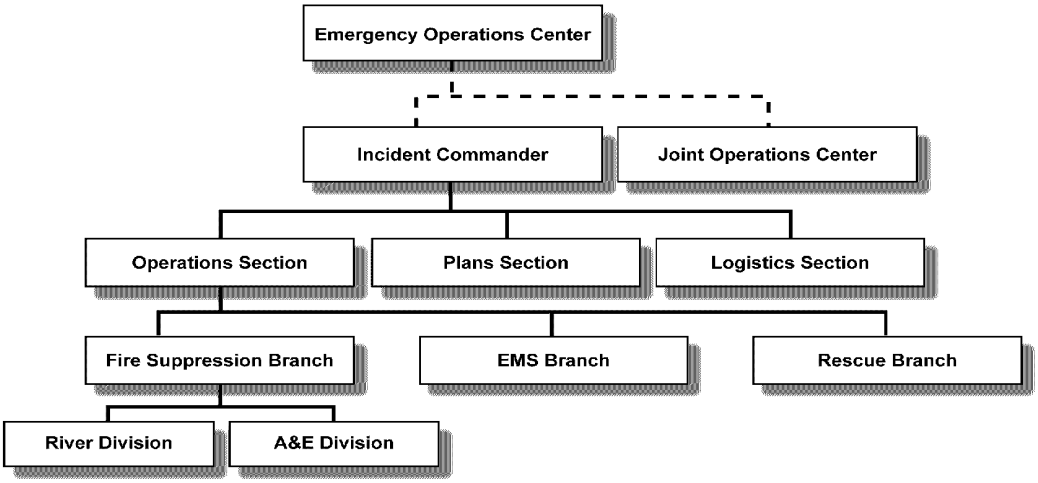


Figure A-6. Initial Incident Command structure.

The FBI had more than one role. It was responsible for the entire crime scene operation, including evidence gathering and body recovery. That operation engaged more than 700 FBI agents at the Pentagon, assisted by hundreds of people from other organizations. It was also responsible for organizing and operating the Federal interagency Joint Operations Center (JOC) as the Federal agency "coordination" center. The FBI was also responsible for investigating the hijacking at Washington Dulles International Airport.

At about noon, ASAC Bob Blecksmith arrived at the Pentagon and took over as the FBI On-Scene Commander. It quickly became apparent the FBI needed more space for its unified Law Enforcement Command Center since the area around the ICP was terribly congested. ASAC Blecksmith also noted Special Agent Combs was extremely knowledgeable about the fire emergency and had an outstanding relationship with Chief Schwartz and other key leaders of the response force. ASAC Blecksmith kept Special Agent Combs with him as an advisor and established the FBI command post at the Virginia State Police Barracks, adjacent to the Navy Annex and overlooking the Pentagon. ASAC Blecksmith and Special Agent Combs spent most of the afternoon preparing to activate the JOC at Fort Myer. Chief Schwartz stayed at the Incident Command beneath the highway overpass at the Pentagon.

This arrangement left the ICP without a full-time senior FBI presence. Administratively, this decision made sense, but it had a significant, though temporary, operational downside.

The ACFD does not have a mobile command center. This presented a persistent challenge throughout the operations. Initially, the Incident Commander operated from the back of a Chevrolet Suburban "command buggy." When advised by Special Agent Combs that a second "hijacked aircraft" was headed toward the Pentagon, Chief Schwartz ordered evacuation and moved the ICP to a position

under a highway overpass. At that new location, the ACPD made available to the ACFD its mobile command post to serve as the ICP. The change in location and vehicle configuration caused some added confusion. Even Chief Plaugher, returning from aerial surveillance of the Pentagon damage, had difficulty finding the ICP.

Given the likelihood of additional evacuations, Chief Schwartz decided to keep the ICP at its new location and establish a forward Operations Section at the heliport. To support the Operations Section, he accepted the Fairfax County Police Department's (FCPD's) offer to use its mobile command unit.

Confusion also existed because some ancillary commanders wore the distinctive blue Incident Command vest. In more than a few incidents, firefighters presumed they were talking with the Incident Commander when they were actually speaking with a branch commander.

ACPD Mobile Command Post.

The Greater Metropolitan Washington Area Mutual-Aid Operation Plan specifies a color-coded identification system for key functions, including command (blue), staging (green), treatment (orange), and public information (white). It also states that flags of the same color should be used to designate the location of that particular function. Most incidents are sufficiently confined that only identification vests are used; thus, the practice of flying location flags is generally ignored. No identifying flags were readily available or flown at the Pentagon.

Some confusion also occurred regarding the designation of the heliport area on the west side of the Pentagon as the "River Division," since the east side of the Pentagon is officially known as the River Entrance. In the hectic early hours of the incident, this site did not lend itself to the typical alphabetical designations. Leaders had to point and use geographic terms to make instructions clear. Near the ICP, there is a large overhead highway exit sign pointing to the "River Entrance." Chief Schwartz looked up and saw that sign, hence the name River Division. This confusion was corrected on September 12, when fire and rescue operations had entered a new phase and sectors were renamed using alphabetical designations. Under this new configuration, the ACFD was assigned Division A in the vicinity of the impact area; the District of Columbia Fire Department (DCFD) was assigned Division B in the Center Courtyard; Alexandria was assigned Division C to the left of the point of impact; and the Fairfax County Fire and Rescue Department was assigned Division D on the right side. Communications interoperability issues largely drove this structure. The new divisions would operate internally on the radio channel of the lead jurisdiction and would also carry an ACFD radio for command communications.

"River Entrance" sign.

A major problem emerged when many units arriving at the Pentagon failed to report to the ICP before positioning their equipment and joining the firefight. For example, between 9:41 a.m. and 9:43 a.m. on September 11, the ECC Administrator, Steve Souder, acting on his own initiative, contacted the Fairfax, Alexandria, and District of Columbia fire departments. He gave them identical instructions: deploy four engines, two trucks, one rescue unit, four EMS units, and a command officer to a staging area short of the Pentagon and hold them there until called forward. Fairfax and Alexandria followed Souder's instructions but the DCFD did not. Instead, they deployed directly to the Pentagon and commenced operations with a contingent of District of Columbia and Maryland units approximately three times larger than Arlington County requested. Some other units from outlying jurisdictions, anxious to join the effort, committed resources without instructions. Many of these units did not coordinate with the

Incident Commander. As a result, Chief Schwartz had to establish the ACFD command presence and, simultaneously, gain control of the freelancing units.

Most jurisdictions controlled and supported their own units, but did so under the umbrella command of the ACFD Incident Commander. This was not the case with the DCFD, which chose to retain jurisdictional independence at the Incident Command level throughout the operation. In many situations, the DCFD performed exceptionally well at the unit level, working side-by-side with firefighters from the ACFD and elsewhere, and taking direction from appropriate functional leaders. Independent operations at the Incident Command level compromise accountability and elevate risk.

The role of the EMS Branch also evolved over the first few hours. Although triage, treatment, and transport requirements were intense at the incident scene during the first hours of the emergency response (See Section 1, Initial Response), after 1:00 p.m. on September 11, ACFD EMS support shifted from treating victims of the attack to providing medical care to the on-scene responders and volunteers.

EMS Control discussions.

At approximately 1:15 p.m., Battalion Chief James Bonzano relieved Chief White and assumed responsibility for the EMS Branch. Chief Bonzano met with all officers assigned to the EMS Branch regarding EMS goals and obtained an assessment of the operation at that time. At approximately 2:00 p.m., another evacuation was ordered requiring displacement and subsequent reoccupation. (See Figure A-7.)

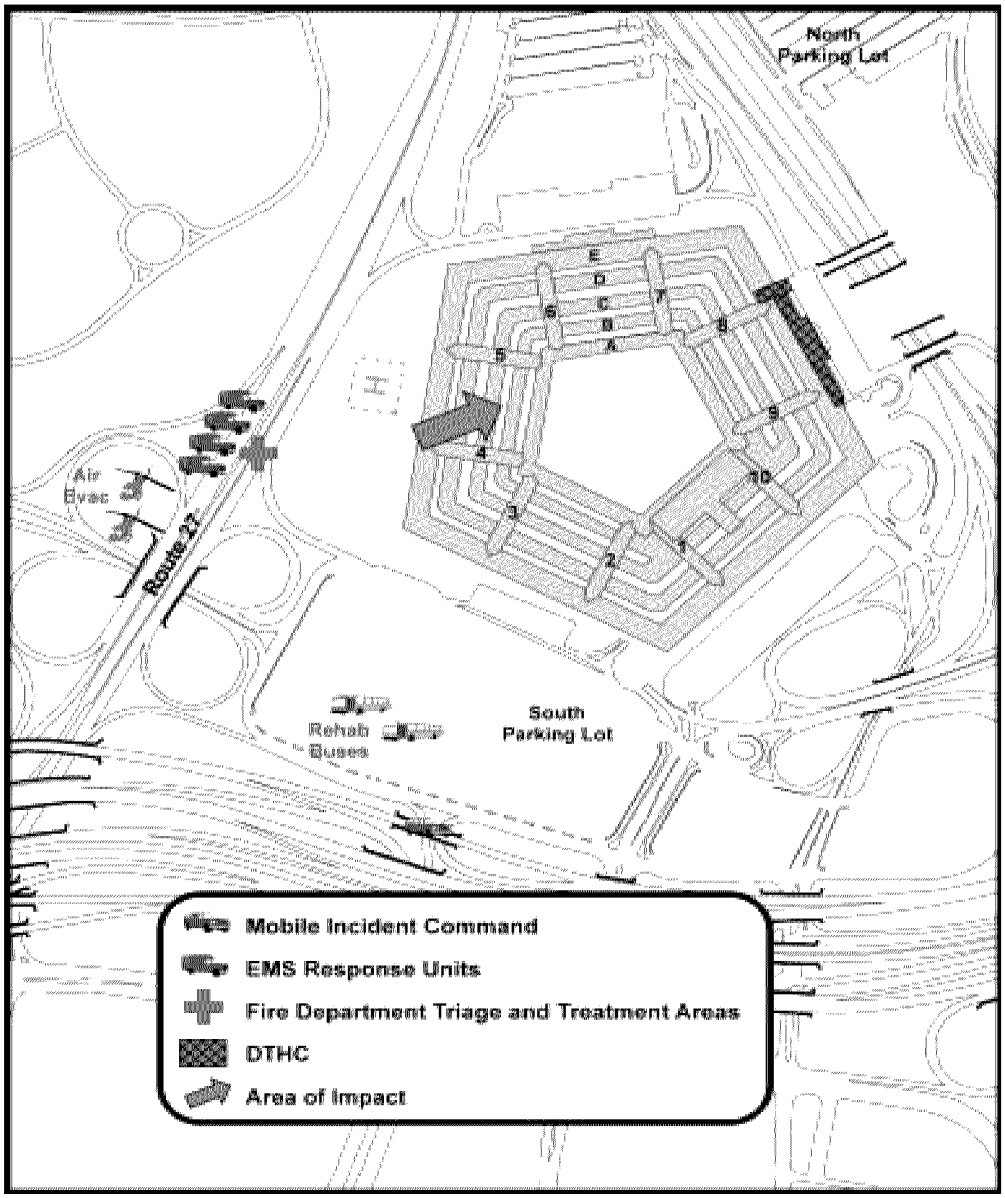


Figure A-7. Final triage, treatment, and rehabilitation locations.

The ACFD EMS stood down as a branch at 5:00 p.m. on September 13, but maintained a presence until the ACFD relinquished control of the incident site to the FBI on September 21.

Chief Schwartz met with Chief John Jester of the DPS at about 2:00 p.m. on September 11, and told him that he needed a large Pentagon meeting room that

evening. Chief Jester arranged for the Secretary of Defense's press briefing room. At 6:00 p.m., the Incident Commander met with representatives of all engaged organizations, including Pentagon renovation contractors. He congratulated them on the work of the first 8 hours and explained that he expected the fire and rescue effort to continue at least another 8 days. Chief Schwartz then explained the purpose, organization and functions of the ICS. He also described the transition from a single command to a wholly Unified Command. While the ACFD would retain final decisionmaking authority, the Unified Command team would include command-level representatives from the ACFD, ACPD, FBI, DoD, FEMA, and the leader of the Incident Support Team (IST). At that meeting, the FBI announced its intentions of opening the JOC at midnight and urged that all parties assign a senior representative to the JOC. Chief Schwartz initially agreed to collocate the ICP with the JOC while the operations section remained at the Pentagon heliport.

Delayed by the installation of computing and communications equipment, the FBI opened the JOC in Building #405 at Fort Myer at 6:00 a.m. on September 12. At the JOC, senior representatives of Federal Departments and agencies with relevant responsibilities typically exchange intelligence information and coordinate policy and interagency activities. Special Agent Paul Garten and Special Agent Jennifer Gant organized and performed duties at the JOC, which proved invaluable throughout the operation. On the morning of September 12, FBI SAC Timothy Bereznay assumed the duties of On-Scene Commander at the JOC.

ACFD Assistant Chief Shawn Kelley was in Alabama on September 11 and drove all day, arriving in Arlington at 12:00 midnight on September 12. He helped with final JOC arrangements and worked there throughout the day representing the ACFD Incident Commander while Chief Schwartz got a short break.

Chief Schwartz subsequently determined that the contrasting missions of the JOC (Policy and Interagency Coordination) and the ICP (Operational Command) could best be accomplished as distinct entities. He relocated the ICP back to the incident site on the morning of September 13. Chief White was assigned as liaison at the JOC and Chief Kelley worked as the night shift Incident Commander.

When Chief Schwartz moved the ICP back to the incident site, he also asked that Special Agent Combs be reassigned as the FBI representative to the Incident Command. After some discussion, Special Agent Combs returned to the ICP, reestablishing the critical face-to-face coordination link between the ACFD and the FBI at the incident site. Although communication between the FBI and ACFD was never completely severed, the value of full-time FBI presence at the ICP cannot be overstated. The combination of Chief White representing the Incident Command at the JOC and Special Agent Combs representing the FBI at the ICP ensured effective continuous communications and coordination.

During the first few days of the fire and rescue effort, shift changes, dismissal instructions, and information management were often problematic and uncoordinated. Some teams worked for hours without relief, while replacements waited for hours to get assignments. This was particularly true of locations that were visually remote, such as the Center Courtyard and the Pentagon roof. For example, when the ACFD TRT was ordered into the Pentagon for a third time on September 11, the unit commander declined, deferring to replacements waiting at the forward staging area. With the approval of the Operations Section Chief, Captain Scott McKay dismissed his team with instructions to return in 12 hours, setting definitive shift hours.

Additionally, dismissal instructions at the end of a work shift were often unclear and sometimes contradictory, and sleeping accommodations not coordinated or efficiently planned. Some fire and rescue personnel were sent to the Thomas Jefferson Community Center for long-term rehabilitation with instructions to stay there overnight. Others were told to return to their stations and remain there, although fill-in units were sleeping on the beds at the station. Still others were sent home. More than 90 percent of ACFD personnel live outside the county, some residing as far away as Stafford County and West Virginia. In many cases, traffic conditions exacerbated by the Pentagon situation added 2 to 3 commuting hours to a 12-hour work shift.

Information management is always an important command function but, during an emergency response of this magnitude, it is absolutely critical.

On one level, response personnel need to be aware of conditions away from the incident scene. In the hectic early hours of the incident response, it was not feasible to share information with responders who were struggling to rescue victims. As a result, rumors prevailed. Many firefighters "heard" Camp David, the Sears Tower in Chicago, and other targets had been struck by terrorists. As time passed and the command structure evolved, information management improved.

Unified Command team meetings were scheduled 4 times a day, including the Incident Command staff and liaison personnel from the military, FBI, ACPD, FEMA, and the IST leader representing the US&R teams. Additionally, Incident Command staff meetings, attended by section and branch commanders (e.g., fire suppression, logistics, EMS), took place before each 12-hour shift to review progress, determine specific requirements, and set goals for the next work period. The FBI held intelligence briefings regularly at the JOC.

Of far greater significance is the necessity of having accurate, valid, and timely information about additional potential attacks that pose an immediate threat to the response force. Such information cannot wait for the initial turmoil to subside. On the following four occasions during the first 24 hours, it was necessary to evacuate the Pentagon:

- The first evacuation, only 20 minutes after the crash, was a building evacuation, when Captain Gibbs and Battalion Chief Tim Lasher of the Ronald

Reagan Washington National Airport Fire Department warned of an imminent structural collapse.

- The next three evacuations were full site-clearing evacuations caused by reports of additional threats of hijacked aircraft heading toward the Pentagon.
  - The first of these occurred at about 10:15 a.m. on September 11, when Special Agent Combs told Chief Schwartz another hijacked airliner was flying on a trajectory toward Washington, DC, and was 20 minutes away. Special Agent Combs got this information from the command center at the FBI WFO, which was in direct contact with the Federal Aviation Administration (FAA). Using a radio belonging to an airport firefighter, he confirmed the information directly with the control tower at Ronald Reagan Washington National Airport. The Incident Commander ordered fire and rescue personnel to relocate to the relative safety of a highway overpass. The evacuation required fire and rescue personnel to move in full firefighting gear the equivalent of five football fields.

    Chief Schwartz issued a warning with each flight status update until the last warning when the airliner went below radar coverage in Pennsylvania, an estimated 4 minutes flying time from the Pentagon. Five minutes later, Special Agent Combs told him the airplane had crashed in Pennsylvania and the all clear was sounded. At 10:37 a.m., United Airlines Flight #93 crashed into a field near Shanksville, PA. The heroic actions of doomed passengers had thwarted the terrorist plan.
  - The second and third full site-clearing evacuations were ordered based on reports of unidentified aircraft heading toward the Pentagon. One occurred at about 2:00 p.m. on September 11, and the other around 10:00 a.m. on September 12. In both cases, the Arlington County ECC was notified by the control tower at Ronald Reagan Washington National Airport of "inbound unidentified aircraft." The ECC properly notified the Incident Command of each and Chief Schwartz ordered evacuations. It was later determined the incoming aircraft were "friendly." One carried Attorney General John Ashcroft and the other, FEMA Director Joseph Allbaugh. Operating only on the information that "an unidentified aircraft is 10 minutes out and heading this direction," the Incident Commander had no option but to order full evacuations.

The first of the three full site-clearing evacuations was based on valid threat information originating from the FBI WFO Command Center and based on real-time FAA data. The FBI representative at the Incident Command provided the information directly to Chief Schwartz. The second and third full site-clearing evacuations were based on invalid threat information obtained during the period of time when there was not a senior FBI presence at the ICP. Accurate information should have been available, given the presence of the FBI, FEMA, the military, and the Ronald Reagan Washington National Airport Fire Department. Validated threat information would have prevented the debilitating

effects of two of the three full site-clearing evacuations, which extracted a serious toll in terms of the physical and psychological well-being of responders. These evacuations also interrupted the fire attack and changed on-site medical treatment of injured victims during the crucial early stages. Friendly aircraft, carrying U.S. Government executives and escorted by fighter aircraft, should not have been cause for evacuation.

Managing the flow of external information was also important. Understandably, in the first few hours, the media obtained information from any available source, including passengers in automobiles caught in the I-395 congestion. Thus, there were "eyewitness" accounts of a "small private aircraft" crashing into the Pentagon, and many other erroneous reports. Estimates of "up to 800 fatalities" were based on the potential occupancy of the impact area at the Pentagon, despite the renovation work that left a significant part of the area uninhabited.

Establishing effective media information dissemination took longer than it should have, for a number of reasons. The vacant ACFD Public Information Officer (PIO) position was a contributing factor to the media interface problem. This shortfall was remedied when Chief Plaugher appointed Captain George Williams as PIO on September 12. Another contributing factor was the absence of Mr. Richard Bridges, Arlington County Assistant Manager for Public Affairs, who was in Charlottesville on the morning of September 11. Thus, Chief Plaugher and General Jackson held the first official press conference at 11:00 p.m., on the evening of September 11.

Additionally, when the JOC opened, the FBI Headquarters chose not to activate a Joint Information Center (JIC), which would have served as a focal point for coordinating all interagency media interface. The failure to establish a JIC proved to be an impediment to the presentation of coordinated, factual, and timely public information. There was not a central point of interface between the media and the agencies involved in the response. Each agency dealt separately with the media.

Finally, it is difficult to overstate the value of personal relationships formed and nurtured among key participants long before the Pentagon attack. Chief Plaugher served in the Fairfax County Fire and Rescue Department for 24 years before moving to Arlington. Chief Tom Hawkins of Alexandria spent 15 years with Arlington County. Chief Brown of Loudoun County is a Fairfax alumnus. One of Special Agent Combs' jobs with the FBI NCRS was to establish and maintain close working relationships with the regional fire and rescue departments. His relationship with Chief Schwartz was well-established before September 11. The list of beneficial personal relationships extended throughout the ranks. Firefighters from neighboring jurisdictions had often worked and trained together, which built valuable trust and confidence.

Recommendations and Lessons Learned

Deploying units must strictly adhere to instructions from the ECC until arriving at the incident site and being placed under control of the Incident Commander or Staging Officer. In responding to a catastrophic incident, it is especially important that units deploying from outside the immediate area contact the host jurisdiction dispatch center for information and instructions. (FD-021)

All deployed units, whether or not they have adopted the ICS, must accept the command primacy of the responsible jurisdiction. Units that choose to operate outside a unified structure should be replaced. (FD-022)

To every extent possible, the command structure at the incident site should be preplanned and agreed upon by area responders and public safety organizations. All agencies should adhere to a single command system. The NIIMS ICS was recently adopted by the Washington Metropolitan Area Council of Governments and is a widely accepted model. (FD-023)

In a large-scale incident, it is difficult to distinguish between command echelons; therefore, a new, more precise, identification system should be conceived and adopted by all fire and rescue organizations. If the system described in the Greater Metropolitan Washington Area Operation Plan is deemed adequate, it should be put into regular practice. Location flags should be flown routinely for three-alarm emergencies, possibly augmented by lights of similar color for night operations. (FD-024)

Similarly, there must be only one person with the title of Incident Commander and only one ICP. The ACFD should take the initiative to clarify terminology within the ICS so the Incident Commander is clearly distinguishable from the leaders of supporting organizations. (FD-025)

Standardized NIIMS ICS forms should be available and used for all long-term incidents. (FD-026)

The Incident Commander must be physically present at a location in proximity to the incident and at an ICP that can accommodate the ICS staff functions. (FD-027)

In a terrorist-generated event, a senior FBI presence at the ICP, as a member of the Unified Command team, is essential at all times. (FD-028)

During the response to a terrorist attack, the Incident Commander must have timely access to reliable threat information. It is vital that valid information be made available to avoid the toll of unnecessary evacuations. Providing valid tactical threat information is the responsibility of the FBI and the ACPD. (FD-029)

If a JOC is activated, a JIC should also be activated. Coordinating the flow of information goes hand-in-hand with coordinating operations. (FD-030)

The ACFD needs access to a fully functional state-of-the-art mobile command and communications capability. It should be expandable with compatible tentage, panels, and transportable equipment so it is adaptable to circumstances of different size and duration. (FD-031)

Shift changes and dismissal instructions should be described in the department's standard operating procedures (SOPs) to which changes can be made to accommodate the circumstances of a particular event. (FD-032)

The Arlington County EOC should be exercised periodically with the ICS to improve coordination, communications, and interaction. (FD-033)

Personal and professional relationships that cross organizational and jurisdictional boundaries are important and should be established, reinforced, and nurtured throughout the response community. However, they are not a substitute for good planning. (FD-034)

SECTION 3: COMMUNICATIONS

Observations

On the morning of September 11, communications systems were busy even before American Airlines Flight #77 crashed into the Pentagon. The Nation was already caught up in the terrorist attacks at the World Trade Center in New York. Relatives called family members, business associates called colleagues, neighbors visited with neighbors, all trying to understand the horrendous events depicted by the continuous media coverage. In the moments immediately before impact at the Pentagon, the Arlington County ECC began receiving 9-1-1 calls reporting a low flying airliner that seemed off the normal flight path. When the crash actually occurred at 9:38 a.m., all area communications seemed simultaneously overwhelmed. Firefighters calling the ECC couldn't get through. Relatives of Pentagon workers found cellular and land lines jammed. Emergency traffic flooded radio channels.

The hub of Arlington County public safety communications is the ECC. In 1980, Arlington County consolidated and integrated the police and fire dispatch centers, becoming one of the first jurisdictions in the country to do so. In 1993, the ECC relocated to its present facility on the fifth floor of the Court House Square West Building. (See Figure A-8.)

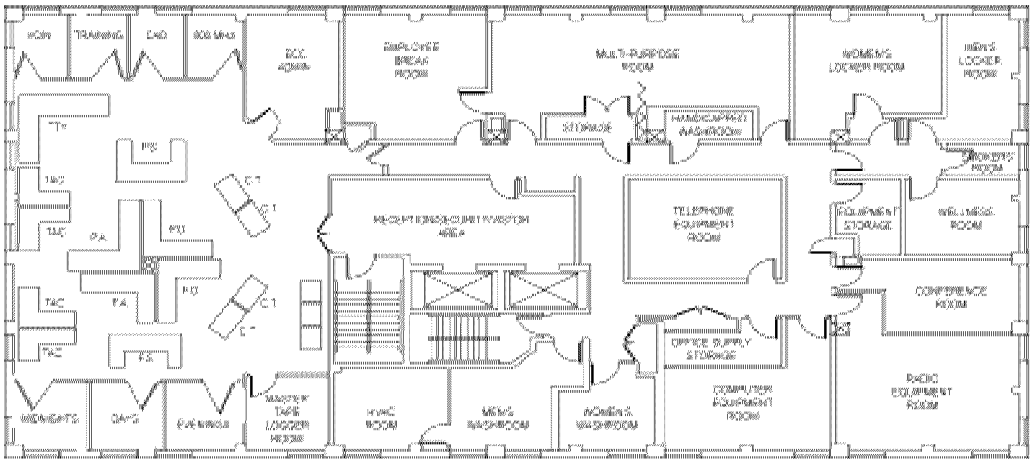


Figure A-8. ECC floor plan.

On the morning of September 11, seven emergency communications specialists, the minimum required staffing level, were on duty at the ECC, having commenced their shift at 7:00 a.m. The tools of their trade included a 15-channel 800 MHz Trunked Radio System, a Computer-Aided Dispatch System, and a new 9-1-1 telephone system. The ECC was equipped with televisions to monitor news and weather channels. On this particular morning, six additional staff members happened to be in the conference room attending a training class.

When the first World Trade Center crash occurred, ECC Administrator Souder invited the six student dispatchers into the dispatch center to follow the news. All were watching the televisions when the second tower was struck, bringing silence to the room. The six student dispatchers left the room quickly, retrieving headsets from their lockers, anticipating there might be more to come.

At 9:38 a.m., a large smoke plume appeared beyond the Rosslyn skyline. Arlington County Police Corporal Barry Foust radioed the ECC that he saw an American Airlines jet crash into the Pentagon. The ECC swung into action.

The ECC redirected units that had been dispatched minutes earlier to a Rosslyn high-rise fire, now reported under control. ECC Administrator Souder alerted the Fairfax, Alexandria, and District of Columbia fire departments, asking that they stage units in preparation for a call for assistance. He also directed that Virginia Hospital Center - Arlington, George Washington University Hospital, Georgetown University Hospital, Washington Hospital Center, MedStar, and Inova Fairfax Hospital be notified by telephone. Mr. Chris Satterfield, a Communications Technician, contacted the Fort Myer Fire Department, but could hear in the background they were already rolling, as a result of a call from Captain Gilroy on station at the Pentagon heliport.

Findings

The 9-1-1 system was overwhelmed. The ECC has eight 9-1-1 emergency lines and an additional eight nonemergency lines. When the emergency lines are all busy, incoming calls automatically rollover to the eight nonemergency lines. When those lines are also fully engaged, the ECC has no capacity for outgoing calls. The staff used personal cellular telephones to call hospitals and MedStar.

Had there not been six additional technicians at the ECC for training, the duty staff could not possibly have handled the volume of emergency traffic in the first few hours after the attack. There are simply not enough call takers in a duty staff of seven persons.

Firefighter Terry Theodore was on light duty on September 11, assigned to a temporary communications technician position at the ECC. Many ACFD EMS and other responders commented on the value of having someone with his operational background and knowledge of fireground and ICS activities at the ECC.

The Arlington County ECC made only one announcement directing EMS responders to use an alternate channel. Repetition of this announcement is essential to ensure newly arriving EMS units understand the operating channels. Because of the failure to repeat this announcement periodically, many units were initially unaware of the assigned EMS radio channel.

The current radio dispatch system is not integrated with other local jurisdictions and does not include location displays. Additionally, the antiquated tape log

system does not provide ready access to dispatch communications data. ECC staff indicated that a truly useful 24-hour dispatch record would take a week or longer to produce.

Most units arriving in the area from outlying jurisdictions did not check in with the ECC before departing or while en route. They proceeded directly to the Pentagon.

Recall notification procedures seemed ad hoc. Recall notices were not prepared in advance and available for public service announcements, as was the case with other Washington area jurisdictions. Emergency notification directories used by the ECC were, in some cases, different than those established by the ACFD. The paging system seems to be the most reliable recall device, but most firefighters are not issued pagers.

Communication at the scene was challenging. Radio traffic overwhelmed the system to the extent that foot messengers became the most reliable means of communicating. Fortunately, there was a growing surplus of people onsite and available to serve in that capacity.

Radio communications inside the Pentagon were, for the most part, impossible. Where line of sight could be achieved, "talk around" was minimally effective.

Initially, as calls jammed local towers, cellular telephones were not useful. No priority was assigned to emergency services. Nextel telephones with the 2-way radio capability were somewhat more reliable.

There was not a Clearinghouse Hospital designated. Thus, EMS Control did not have a single communications point of contact among hospitals and clinics.

Some mutual-aid EMS responders deviated from SOPs by not using the Arlington County radio system despite having the capability. In some cases, portable radios were not preprogrammed to allow interoperability. Others were preprogrammed in a manner that prohibited it.

Fairfax County, Alexandria, and MWAA EMS responders effectively used bullhorns for public announcements such as evacuation instructions at the incident site.

EMS providers stated they monitored radio channels for information but did not rely on radios to transmit information. Ambient noise sometimes made it hard or impossible to talk on the radio. Earpieces might have helped mitigate such distractions.

EMS responders equipped to do so used multiple radios to monitor incident operations on different frequencies. This gave them an understanding of the robust ongoing response activities.

No Arlington County EMS units are equipped with mobile data terminals (MDTs) to transmit information to the ECC in text format. Only Fairfax County units are

so equipped. Many EMS responders believe that MDTs would have substantially augmented the Computer-Aided Dispatch System. With this technology, they could have regularly updated the ECC without further congesting radio traffic.

Some mutual-aid jurisdictions arrived without handheld radios. Others used equipment incompatible with the ACFD or preprogrammed in ways that limited communications. Equipment interoperability continues to be an issue.

Beginning on September 12, the Incident Command Operations Section organized the fire suppression units into four divisions, each led by a chief officer from the preeminent jurisdiction (Division A – Arlington, Division B – the District of Columbia, Division C – Alexandria, and Division D – Fairfax). They were instructed to use the assigned home jurisdiction radio channel for communicating. This facilitated "talk around" within each division. However, in one instance, a DCFD replacement crew worked on one portion of the roof of the Pentagon while an ACFD team worked on a different portion. The two units had no way to communicate with each other in case either team needed help.

The former "Metro Channel" was replaced several months ago, after the District of Columbia acquired the 800 MHz system. The District of Columbia has not yet completed integrating their new system with neighboring jurisdictions' 800 MHz systems. Additionally, the Federal Government and some other jurisdictions do not have access to the 800 MHz system.

Inside the Pentagon, the radio evacuation signal was not sufficiently clear. It was sometimes difficult to distinguish between three short bursts and one long burst amid the noise inside the burning building.

Recommendations and Lessons Learned

A communications mechanism needs to be developed to activate mutual-aid resources. Using strike teams and task forces as described in the Washington Metropolitan Area Council of Governments Mutual Aid Operations Plan may be a useful starting point. (FD-035)

The ECC radio dispatch system should be upgraded and integrated with those of other local jurisdictions and include an automated vehicle locator system. (FD-036)

Nonemergency telephone lines at the ECC need to be set aside so an outside line is always available to the ECC staff. These lines should not be among those to which 9-1-1 calls are forwarded. (FD-037)

The minimum ECC staffing level of seven technicians proved insufficient and should be reviewed to ensure optimal use of communications technicians. (FD-038)

Recall procedures and notification lists at the ECC should be regularly reviewed, updated, and tested. (FD-039)

A modern ECC call recording and storage system would better support review and analysis of operations as well as generate timely and accurate post-emergency data. (FD-040)

In coordination with the Arlington County Office of Public Affairs and the ACFD PIO, procedures should be established to ensure timely public media recall announcements during large-scale emergencies. (FD-041)

All ACFD firefighters and emergency medical technicians should be issued pagers. (FD-042)

Radio channel and talk group allocation for fire and rescue command, operations, and logistics functions should be preplanned, established early, and clearly communicated. (FD-043)

All units arriving in the area from outlying jurisdictions must check in with the ECC before departing home station or while en route, and then report to the Incident Command Staging Officer before positioning their equipment and joining the fight. (FD-044)

Cellular call priority should be given to public safety personnel during an active emergency of this magnitude. If needed, portable cellular towers should be positioned to support emergency responders. (FD-045)

On-site radio evacuation signals must be clear and unmistakable. The inability of response personnel to hear and understand evacuation instructions is a life-threatening deficiency. If necessary, a single signal should sound the evacuation, with voice notification used for all clear. Once on the incident site, supporting agencies should adopt the ICS signaling procedures. (FD-046)

Communications interface with area treatment facilities merits a comprehensive review. Hospitals and other specialized facilities are an integral part of the public safety system. Regional medical and public safety officials should consider reinstating provisions for designating a Clearinghouse Hospital. (FD-047)

There should be a regional review of response plans to identify, institute, and agree on communication channels to be used by all area responders and hospitals to ensure complete communications. (FD-048)

All regional public safety organizations should regularly inspect portable radio devices and ensure they are programmed to allow communications in a mutual-aid environment. (FD-049)

Arlington County should routinely assign at least one firefighter to the ECC to provide insight into fire department operations and the ICS. (FD-050)

One of the recommendations most frequently mentioned by EMS responders was that the ACFD should install MDTs in EMS and other response units. (FD-051)

SECTION 4: RECALL AND STAFFING

Observations

For the most part, members of the ACFD's two off-duty shifts were engaged in personal activities and widely dispersed on the morning of September 11. Fewer than 10 percent actually live in Arlington County. Most reside in outlying communities as far away as Stafford County to the south and Loudoun County to the west. Like most Americans, many became aware of the World Trade Center attack fairly early. Some were watching one of the morning television shows when news came that the first airliner crashed into the World Trade Center at 8:45 a.m. Others learned about the attack from relatives or neighbors and had tuned into the news by the time the second crash occurred at 9:06 a.m.

When the Pentagon attack occurred at 9:38 a.m., many off-duty firefighters reacted automatically and headed for their normal duty stations. Others tried calling the ECC for instructions, but few actually got through. While continuous national and local public news broadcasts aided the awareness process, official notification was more problematic. Emergency traffic jammed radio channels. Cellular telephones were virtually useless during the first few hours. The paging system worked for some, but few firefighters had pagers. Chief Plaugher was in Fairfax when he learned about the World Trade Center attacks and the subsequent attack on the Pentagon. He proceeded directly to the Pentagon, without receiving a page or any other official notification. The Emergency Alert System (EAS) was not activated. Public service announcements on television and radio directing off-duty fire and rescue personnel to report for duty included most area jurisdictions except Arlington County.

The high volume of incoming calls at the ECC presented one of the notification challenges. Because the 9-1-1 telephone lines automatically rollover to the nonemergency lines, at times no lines were available to make outgoing calls. Directed "call-back" confirmation calls acknowledging receipt of pager instructions further compounded the overwhelming telephone traffic.

Despite the challenges of inconsistent formal notification, geographic dispersion of off-duty personnel, and massive traffic congestion throughout the Washington Metropolitan Area on September 11, the full ACFD workforce assembled in a few hours. This self-activated recall is due largely to the training, discipline, and dedication of ACFD personnel. The next challenge was to organize and effectively employ this workforce.

Most returning firefighters went first to their assigned stations to recover personal protective equipment (PPE), then proceeded to Fire Station 1. As people gathered, Battalion Chief Lyon took charge of organizing the replacement personnel and designating Station 1 as a Field Operations Center. Individual accountability tags were used to start forming teams with balanced levels of skill and experience.

By early afternoon, all the ACFD stations were occupied by units from other jurisdictions, which backfilled ACFD units and responded to routine calls throughout the county.

The growing crowd of ACFD firefighters watching the Pentagon fire on television at Station 1 was anxious to engage in the firefight. Periodically, Battalion Chief Lyon would address them and point out this was a long-term operation and there was "plenty of fire for everyone." Nevertheless, firefighters sought ways to get to the incident site quickly. One volunteered to help organize the replacements, ensuring his entire team was on the first bus to the Pentagon. Others attached themselves to key personnel already traveling to and from the Pentagon.

Congestion continued to grow at Station 1 as ACFD volunteer firefighters mingled with their career counterparts. Some firefighters said they had never seen so many volunteers, and wondered aloud if a volunteer firefighter tee shirt was the only required identification. Volunteers should have reported to the ACFD volunteer coordinator or his representative for instructions based on their skills and levels of training. Battalion Chief Lyon designated Station 6 as an additional personnel staging site to relieve some of the congestion at Station 1.

At Stations 1 and 6, teams of personnel were loaded onto buses and transported to the Pentagon. At the Pentagon, the buses stopped just short of the actual operational area. Replacement personnel sometimes stayed at this forward staging area for 2 hours or longer awaiting assignments, watching their colleagues and those from other jurisdictions fight "their" fire.

There were also numerous episodes requiring ACFD staff to take unusual initiative, such as when Firefighter John Delaney, a HazMat Technician, was assigned temporary liaison with the arriving FBI contingent early on September 11. He not only kept them apprised of the firefight, he also helped them begin gathering maps and other materials for the work ahead.

Findings

Arlington County did not have an emergency recall plan in place with associated systems and notification devices. Many county policymakers, agency administrators, public safety officials, and firefighters were never formally notified of the event or given reporting instructions. Had the Pentagon attack occurred at night, on a weekend, or on a holiday, it is certainly debatable whether the workforce could have assembled in a timely manner.

The paging system, when available and used, seemed to be the most reliable notification device. However, most firefighters do not have pagers. All means of communications should be used for recall, including placing public service announcements with local media. In extreme situations, the EAS should be activated and used.

The paging message to members of the NMRT directed personnel not to "call back," but to report directly to the Arlington County Fire Training Academy. Other page and voicemail messages directed a confirmation callback, adding to an already overburdened telephone system.

The ACFD did not have an effective SOP for recalling and assembling off-duty firefighters. Directing returning firefighters to report to Station 1 caused unneeded congestion and turmoil. It would probably have been more efficient to instruct them to report to and remain at home stations awaiting further instructions. Then, as Battalion Chief Lyon received reports from individual stations, he could dispatch the buses to transport replacements to the Pentagon.

Replacement teams often received only perfunctory situation briefings. Some were not briefed at all. Replacement personnel need to understand the current status and objectives of fire and rescue operations, command structure, and location of command and support elements.

Many replacement personnel arrived at the incident site without full equipment, including air bottles and SCBA. Requiring replacements to hunt for equipment after arriving at the fire scene added an unnecessary element to an already complicated situation.

The ACFD, just like other fire departments, does not maintain sufficient stocks of individual and apparatus equipment to simultaneously deploy all shifts and its reserve apparatus. As a result, the ACFD was only able to sustain a major single-shift operation by using recalled off-duty firefighters as replacements and having them share breathing devices, air bottles, radios, flashlights, and other items with those coming off duty. Similarly, reserve fire apparatus were of little value without a complement of equipment.

Coordination of the relief efforts between off-site and on-site leaders was sometimes deficient. Replacement personnel were not given work assignments until long after arriving at the Pentagon. Some units and individuals remained onsite far too long, particularly those working in remote areas. In some cases, replacement teams, deployed at the Pentagon on the evening of September 11, worked for a couple of hours then were ordered to extended rehabilitation at the Thomas Jefferson Community Center, while others, who had been battling the fire all day, remained onsite. In a few cases, individuals left their duty position "when their shift ended," even though no replacement had arrived.

Some NMRT members were already onsite with EMS units when the NMRT was activated. They had to be replaced in their EMS role to join the NMRT. This violated explicit NMRT policy, which specifies that, in such cases, NMRT members remain with the already deployed unit.

A battalion chief from Alexandria led a busload of 24 replacement firefighters to the Pentagon to work the night shift on September 11. He reported their availability to the ICP Operations Section Chief and was instructed to wait in the

holding area. They waited the entire night while firefighters from Loudoun County, VA, were given repeated assignments.

Some organizations, such as the US&R teams, had different shift schedules. Some changed shift at 5 o'clock, some at noon and midnight, others changed at 7 o'clock. A uniform shift change policy would have enhanced continuity of operations.

The ACFD switched its TRT from 12-hour shifts to 12-hours on and 24-hours off, following the US&R model. Most ACFD personnel preferred the 12-hour shift. Alternating day and night shifts after a 24-hour break required significant adjustment.

Overnight accommodations were not planned for ACFD personnel who reside outside the county. Fill-in units occupied beds at the stations. The notion of sleeping on a cot at the Thomas Jefferson Community Center was not appealing.

It was difficult for ACFD fire and rescue personnel to wait on the sidelines while their counterparts from other jurisdictions were busy fighting the Pentagon fire. Under normal conditions, even for a complex incident such as this, the regularly available resources would be the first responders committed. Unfortunately, because so many outside units self-dispatched immediately to the scene, this did not occur.

ACFD personnel exhibited some compelling attributes throughout this ordeal. Discipline distinguished the ACFD workforce. Throughout this endeavor, firefighters were willing to do whatever was needed, regardless of how mundane or hazardous the task.

Recommendations and Lessons Learned

A phased alerting system should be considered for fire and rescue operations of significant magnitude and likely long-term duration, similar to the various military readiness levels. At each specified level, different actions automatically occur, such as personnel assembly, equipment inspections, deployment to forward staging areas, implementing long-term rehabilitation, and contracting for overnight accommodations within reasonable distances from the incident site. The Arlington County Comprehensive Emergency Management Plan (CEMP), which presently alludes to such a system, should be expanded with additional operational detail. A revised system of elevated preparedness levels should be compatible with the system recently announced in Homeland Security Presidential Directive – 3, March 11, 2002. (FD-052)

It is vital that the county's CEMP be comprehensive and include a system for notifying county policymakers and agency administrators as well as public safety officials, firefighters, and other first responders. (FD-053)

The Incident Commander should synchronize shift changes among organizations and jurisdictions with attention given to parity in degree of difficulty and duration of shift assignments to avoid burn out and contribute to morale. (FD-054)

A standard briefing format should be adapted for replacement units and personnel. It should include digital site maps or drawings depicting the locations of key activities, information regarding the current status of fire and rescue operations, the command structure, immediate goals and objectives, and warnings of potential concerns (such as additional terrorist attacks). This information should be regularly updated and shared with the EOC. (FD-055)

Procedures need to be developed and practiced for phasing in replacements, relieving engaged teams, and maintaining overall discipline. No one should leave an assigned position until a replacement is physically present. (FD-056)

The ACFD should review and strengthen the role of volunteer coordinator to ensure personnel capabilities can be properly assessed and the best use of volunteers devised without interfering with the organization and deployment of the career staff. (FD-057)

A cache of critical equipment should be acquired and maintained to sustain long-term operations. This operational shortfall should be studied so that all personnel and shifts asked to respond to an incident are adequately equipped for sustained operations. No one should arrive at the incident site without all necessary items. Personnel should be inspected before leaving home station to ensure they are fully equipped and ready. (FD-058)

A program should be implemented, possibly at the Arlington County Fire Training Academy, to help firefighters recognize the importance of all aspects of fire and rescue efforts, even those remote to the incident site. There are valid reasons why certain resources from other jurisdictions should be engaged at the incident site and not simply used in a backfill role, the US&R teams and special airport crash units are just two examples. The ability to work well together, teamwork, is the attribute that most effectively integrates all available capabilities. (FD-059)

The ACFD needs to review recall and personnel staging procedures. Much of the organizational activity that occurred at Fire Station 1 could have been planned in advance. That experience should now be captured and sound procedures put in place and practiced for the future. (FD-060)

SECTION 5: MUTUAL-AID AND OUTSIDE SUPPORT

Observations

Arlington County has mutual-aid agreements in place with its neighbors to the west, the city of Alexandria and Fairfax County, with the District of Columbia to its east, and with the MWAA Fire Department at Ronald Reagan Washington National Airport. With its Virginia counterparts, Arlington participates in the Northern Virginia Response Agreement (NVRA), which facilitates cross-boundary response. It provides automatic dispatch of up to 20 fire and rescue units based on proximity to the incident, regardless of jurisdiction. Arlington has a mutual-aid agreement developed with the District of Columbia, under the auspices of the regional Council of Governments. Unlike the NVRA, it does not provide automatic dispatch; the party seeking support must request it. A similar MOU exists with the MWAA Fire Department. There is also a Statewide mutual-aid program that enables outlying jurisdictions to provide fill-in support to those engaged in fire and rescue operations. Thus, the Prince William County Department of Fire and Rescue backfilled some Alexandria and Fairfax stations while their units supported Arlington.

Under the terms of mutual-aid agreements, the parties provide personnel and equipment to help one another respond to emergencies beyond the capacity of organic resources. Responding parties are not compensated by the requesting jurisdiction but, under emergency conditions, can be reimbursed by FEMA with funds set aside for that purpose. This network of mutual-aid agreements generally extends between neighboring jurisdictions across the country, literally creating a fire emergency safety net.

Moreover, the firefighting tradition of helping one another extends well beyond the technical boundaries of official documents. If one jurisdiction has a particular capability that can make a unique contribution to the firefighting effort, it is likely to appear on the scene, with details to be worked out later. It is the neighborly thing to do.

Some MWAA fire and rescue units automatically responded to this airliner crash, since it was within a 5-mile radius of the airport. These units included EMS-301, Rescue Engine-335, and Special Emergency Response Vehicle (SERV)-329. MWAA EMS responders arrived at the Pentagon incident site at approximately 9:55 a.m. Other MWAA units responded on request. M-325 arrived from a hospital call at 10:00 a.m., and SERV-362 arrived from Washington Dulles International Airport at 10:45 a.m.

Early on the morning of September 11, a pager message was sent to all Alexandria responders stating the World Trade Center had been attacked. After the Pentagon attack, Alexandria units were dispatched to a staging area south of the Pentagon on the George Washington Parkway, as requested by the Arlington County ECC. Alexandria EMS responders included M-202, M-206, and M-208. While en route to the staging area, they were ordered to proceed directly to the

scene. Dr. Vafier accompanied the EMS response force. As units deployed to the incident scene, one was flagged down by evacuating victims and set up a treatment site at the Pentagon's South Parking Lot.

Fairfax County Fire and Rescue Department EMS responders were initially alerted to the incident by CNN television coverage, and subsequently dispatched by the Fairfax Public Safety Communications Center. As requested by the Arlington County ECC, Fairfax County Fire and Rescue Department units were directed to a staging area in a shopping center at the intersection of Route 50 and Willston Drive. The Fairfax County response included a Medical Task Force comprising EMS-4, M-408, and M-405. Units EMS-4 and M-408 were dispatched from the staging area directly to the Pentagon, and arrived at 10:20 a.m. The third unit, M-405, was ordered to forward stage at Station 10 in Arlington. Upon arrival at 11:00 a.m., the unit treated a Pentagon victim in respiratory arrest, who had been driven there by a coworker. The victim was transported to Virginia Hospital Center - Arlington and M-405 was subsequently assigned to the Pentagon as part of a Suppression Task Force.

The DCFD had legitimate concerns of possible terrorist attacks in its own jurisdiction. Therefore, it activated mutual-aid pacts with Montgomery County and Prince Georges County and was able to deploy substantial resources to the Pentagon while maintaining vigilance throughout the District of Columbia with most of its own resources.

Mutual-aid medical evacuation helicopter support was provided by the U.S. Park Police (USPP), MedStar (Washington Hospital Center), and Inova Fairfax Hospital. The Air Traffic Control Tower at Ronald Reagan Washington National Airport notified the USPP of the incident and helicopter Eagle I was dispatched at approximately 9:43 a.m. Eagle II launched 8 minutes later at 9:51 a.m. MedStar was notified by the Arlington County ECC at approximately 10:06 a.m., and launched one helicopter that arrived onscene at approximately 10:18 a.m. Inova Fairfax Hospital launched helicopter AirCare I at approximately 10:00 a.m., after notification by the Arlington ECC. A second helicopter, AirCare II, was launched at approximately 10:40 a.m. The USPP, MedStar, and AirCare provided a total of five helicopters.

Throughout the fire and rescue phase, mutual-aid companies assigned to ACFD fire stations provided EMS to Arlington County residents. An ACFD officer was assigned to ride with each mutual-aid unit to navigate and ensure continuity of service.

In addition to support from neighboring jurisdictions planned in advance through carefully constructed mutual-aid agreements, help is also available from Federal and State governments. This unique system of handling emergencies has been finely honed over the years. The fundamental principle is that the local jurisdiction retains control, with support available from all other levels of government. In responding to the terrorist attack on the Pentagon, Arlington County was in charge, with the Virginia Department of Emergency Management,

FEMA, FBI, and other Federal agencies poised to help. Similarly, volunteer organizations, particularly the American Red Cross and Salvation Army, responded to Arlington requests for logistical support.

Medical evacuation helicopter.

Support for the Pentagon response was not limited to the immediate geographic area. (See Figure A-9.) It came from Texas, Ohio, Florida, Georgia, North Carolina, Tennessee, New Mexico, and elsewhere, as the country came together in response to the horrific events of September 11.

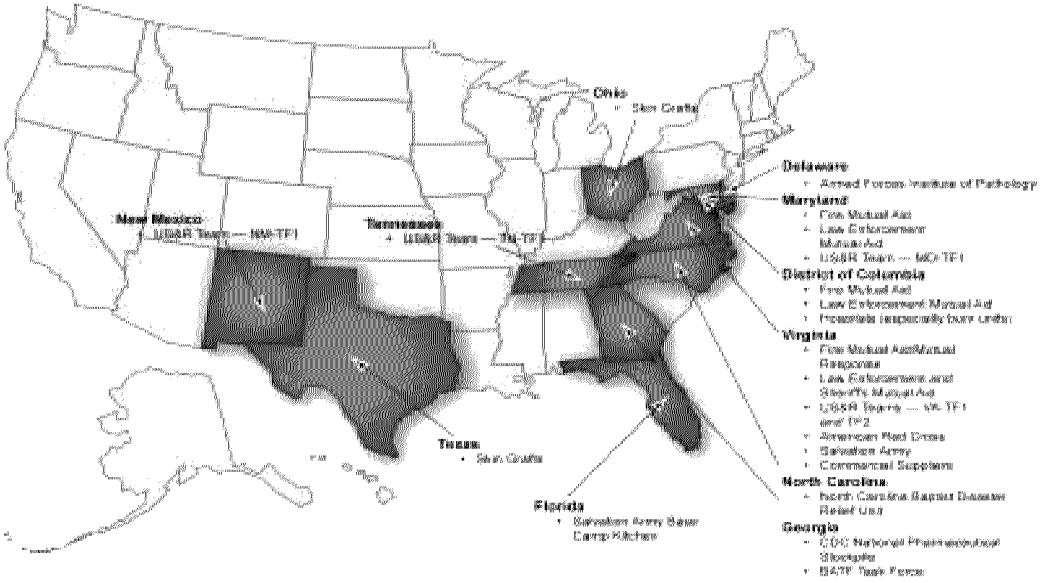


Figure A-9. Incident response resources support.

This was a fire and rescue incident within the broader context of a terrorist attack. Coordination and collaboration with the FBI was critical to operational success. This relationship began well before September 11, 2001. When Special Agent Combs was assigned to the FBI WFO NCRS in 1998, his duties included Fire Service Liaison. As a former New York firefighter, Special Agent Combs put in place a proactive liaison program, regularly visiting area fire department leaders and teaching courses at area fire academies on terrorism, weapons of mass destruction (WMD), and roles and responsibilities of the FBI. All of this paid handsome dividends on September 11 and the days that followed.

Dr. Marcella Fierro, Chief Medical Examiner for the Commonwealth of Virginia, met with FBI and DoD officials at the JOC on September 12. She informed them that Virginia forensic laboratory and mortuary resources were prepared to go to work in support of the response. The FBI and DoD officials declined the offer, preferring to conduct forensic and mortuary activities at DoD facilities. Dr. Fierro asked for and received a letter from Attorney General Ashcroft relieving the Commonwealth of Virginia of those responsibilities.

The FBI has extensive experience in, and is responsible for, collecting evidence and investigating terrorist acts. It also has extensive experience in crime scene mortuary operations. Under the leadership of FBI Special Agent Tara Bloesch, a temporary morgue was established in the loading dock area of the North Parking Lot. Remains were photographed, labeled, and prepared for transport to Dover Air Force Base (AFB) in Delaware for forensic testing, identification, and processing for burial.

The DoD, a major Arlington County constituent, was the target of the terrorist attack. Understandably, it might have followed its military instincts to seize control of the battle and protect its people and property. Instead, the MDW fully cooperated with the ACFD Incident Command and provided valuable resources. This contributed significantly to the positive outcome of the incident response described throughout this report.

Mutual-aid agreements and other emergency support programs were put in place over the years to help communities protect themselves and each other from the ravages of fire. They have stood the test of time. In this instance, mutual-aid agreements, neighboring jurisdictions, and support from Federal and State programs were essential to the successful ACFD response.

Findings

Most mutual-support arrangements worked well. Units from other Virginia jurisdictions supported the firefight and also provided fill-in units for the 10 ACFD fire stations. The ACFD provided a driver or navigator for each of the fill-in units. Some private ambulance companies also served in a backfill role for mutual-aid units in other jurisdictions already committed to support Arlington County. Because of the Northern Virginia mutual-aid participants, the citizens of Arlington County and other Northern Virginia jurisdictions did not experience a break in emergency support services.

The Alexandria TRT was fully integrated with that of the ACFD, forming a unit of almost 60 personnel who worked in conjunction with the deployed US&R teams at the Pentagon. The Fairfax County Fire and Rescue Department was instrumental in organizing and managing the logistics support for the operation (See Section 6, Logistics), and the FCPD loaned the ACFD its command bus for use at the forward operations. MWAA provided a mobile command bus to support the ICS Logistics Section.

The initial staging of units, as correctly directed by the Arlington ECC based on the "run card" they had, did not consider the provisions of the NVRA. Had it done so, more Alexandria units would have been engaged at the Pentagon. Instead, Alexandria, with equipment located only minutes away, provided rotating busloads of replacement personnel while apparatus from more distant jurisdictions worked onsite.

When Ronald Reagan Washington National Airport lost visibility due to the smoke rising from the Pentagon, USPP helicopter Eagle I assumed responsibility for air traffic control at the incident site. This temporarily left Eagle II as the only available medical evacuation helicopter onsite. When Eagle II departed the Pentagon carrying two severely burned victims, a DC Metropolitan Police Department helicopter assumed responsibility for air space control, replaced Eagle I, and freed it to resume its medical evacuation mission.

The DCFD has very special requirements; it is responsible for a large, densely populated area that is home to the White House, the U.S. Congress, the Supreme Court, the National Archives, every Cabinet-level agency, almost all our national monuments, and countless national treasures and artifacts. Nevertheless, supported jurisdictions rely on the unconditional compliance of mutual-aid partners when called upon for support. Many responders felt mutual-aid support from the DCFD was deficient in two areas:

- First, they deployed directly to the Pentagon, ignoring instructions to stage in the District of Columbia, and did so with more equipment than was requested.
- Second, the consensus of those on the ground is the DCFD retained a degree of independence detrimental to good order and discipline within the ICS structure.

The current mutual-aid arrangements do not constitute a truly comprehensive approach to emergency response across the region. The Potomac River is a jurisdictional boundary, not a geographic barrier substantial enough to contain a massive emergency event to only one side of the river, particularly a terrorist act involving WMD.

In the case of EMS, resources were plentiful, particularly in relation to the low number of surviving victims requiring care. Mutual-aid partners provided all the support requested by Arlington County. The fact that the terrorist attack struck a large military facility ensured the availability of military doctors, nurses, and first aid responders. The medical treatment capability assembled at the incident site within the first few hours exceeded the requirement. Had the airliner struck from a different direction into one or more fully populated Pentagon Wedges, the situation might have been far more challenging and catastrophic.

In addition to the mutual-aid providers requested by Arlington County, other EMS units self-dispatched directly to the incident site. Several private ambulance units also responded on their own initiative, depleting regional contract transport services in an already taxed 9-1-1 system.

Arlington County and other jurisdictions do not have access to a readily deployable cache of mass casualty supplies. EMS units carry a limited amount of medical treatment supplies. As a result, medical supplies were taken from several EMS units to stock treatment sectors, leaving these units ill-equipped to transport patients.

The NMRT, which was used in a HazMat monitoring and decontamination role, not a medical treatment role, brought with it additional medical supplies and equipment. These supplies were appropriated and used by military medical responders.

Arlington County government agencies pulled together to support the ACFD throughout operations. The usual bureaucratic delays disappeared. Procure-

ment actions were expedited. At the urging of Ms. Dodie Gill, Director of Employee Support, the newly hired Risk Manager for Workman's Compensation Insurance set aside the usual red tape. Public works equipment operators passing by regularly gave rides to firefighters entering and exiting the Pentagon. Air-conditioned metro buses were used for short-term rehabilitation. Beginning on September 12, Assistant Manager Bridges and his public affairs staff intervened proactively with the media on behalf of the ACFD.

There was outstanding cooperation among jurisdictions and agencies throughout the operations. Most notable was the relationship with the FBI. From the onset, and at every level, they cooperated in every way possible. The close ties developed prior to this incident were further strengthened and are now manifested in continuing day-to-day working relationships.

Following the Pentagon operations, some responding mutual-aid jurisdictions experienced difficulty getting reimbursed for their costs. Delays stemmed from concerns on the part of FEMA regarding the mutual-aid pacts between those jurisdictions and Arlington County.

There were several incidents in which equipment belonging to the ACFD and some other jurisdictions, including high-end items such as SCBA, reportedly was misappropriated at the incident site. A certain amount of equipment exchange is expected during multijurisdictional operations, and is routinely sorted afterward; but, in this instance, it was reported that this went well beyond normal.

The Arlington County American Red Cross Chapter, a member of the EOC Shelter Task Group, coordinated support from the American Red Cross. At the time of the terrorist attack on the Pentagon, the chapter had 80 trained volunteers. Its own mutual-aid arrangements with other chapters and support from national headquarters produced nearly 1,500 support volunteers in a role much broader than the American Red Cross envisioned. Much of the American Red Cross effort was providing logistics support to the response force, as opposed to the victims.

The restraint shown by military leadership was admirable. Instead of seizing control of the situation to protect Pentagon personnel and property, it deferred appropriately to the ACFD Incident Commander. General Jackson, Commanding General of the MDW, served as a principal source for critical personnel and other resources. He was also the point of contact between the Incident Command and Pentagon leadership. This proved invaluable. He ensured the military leaders were fully aware of the status of the fire and rescue activities at all times, thereby diminishing their consideration of interceding in the situation.

American Red Cross service unit.

Fire and rescue personnel from the ACFD and elsewhere drew constant inspiration from the actions of the young soldiers of Fort Myer's Old Guard, the U.S. Army 3rd Infantry Regiment. In every debriefing, someone expressed admiration for their discipline, teamwork, and willingness to tackle the most difficult, laborious, and onerous tasks. ACFD firefighters retain lasting images of the convoy of commissary shopping carts being pushed down Washington Boulevard from Fort Myer carrying refreshments and other comfort items; of the private tent where military chaplains comforted the families of missing loved ones; of wounded victims helping firefighters save others; of lines of soldiers passing debris from person to person, slowly but steadily removing tons of rubble from the Pentagon; and, the image that will never fade, of soldiers under direction of the FBI reverently removing from the rubble the bodies and body parts of fallen victims.

The outpouring of support from the residents of Arlington County was another source of strength for the firefighters. Neighbors showed up at fire stations, cooked and served dinner, then stayed to clean up. The 9-1-1 calls were less than usual, and sometimes apologetic in tone, as callers seemed hesitant to add further to the fire department's burden. One medical unit reported a late-night neighborhood call that required transporting a resident to Virginia Hospital Center - Arlington. As the ambulance backed out of the driveway and headed toward the hospital, neighbors throughout the block stood on their doorsteps cheering and applauding. Such manifestations of community respect and appreciation are a firefighter's greatest reward.

Recommendations and Lessons Learned

Institute a process for reviewing all current mutual-aid agreements against the experience of the Pentagon attack and possible future incidents and revise them to incorporate findings, minimize future misunderstandings, and increase the area's overall preparedness. (FD-061)

Once executed, responding jurisdictions must strictly adhere to the terms of mutual-aid agreements. These agreements should clearly address command relationships to which both parties agree in advance. (FD-062)

Additionally, mutual-aid agreements should be reviewed with the Virginia Department of Emergency Management and FEMA to ensure responding jurisdictions will be reimbursed in a reasonable fashion. (FD-063)

The ACFD should take the lead in putting in place a regionwide mutual-aid pact that includes all neighboring jurisdictions including the DCFD. The NVRA is a reasonable model to replicate from a total regional perspective. Currently, there are legal constraints that prohibit such a relationship embracing jurisdictions in Northern Virginia, Maryland, and the District of Columbia. The Washington Metropolitan Area Council of Governments should continue its efforts to convince the U.S. Congress to remedy this situation. (FD-064)

It is critical that response units from other locations coordinate with the host jurisdiction dispatch center before deploying to an incident site. A lack of coordination with Arlington County added to the confusion present in the wake of a terrorist attack. Upon arrival, they should immediately report to staging areas for instructions. (FD-065)

Memorandums of agreement with private ambulance services should be established and stipulate that they report only to designated staging areas and strictly adhere to the Incident Command directives. (FD-066)

A readily deployable regional cache of mass casualty medical supplies should be acquired to eliminate the need to strip transport units of patient care supplies. MWAA's SERV-301 serves in this capacity, but it is limited and may not always be available. There needs to be a more robust regional capability. (FD-067)

Joint training and exercise programs should be developed and institutionalized to regularly test mutual-aid arrangements. (FD-068)

Arlington County should review the expanded role of the American Red Cross and ensure the local chapter is properly represented at the EOC. (FD-069)

Local responders should develop relations with other organizations, as was done during the Pentagon response between the ACFD and MDW. (FD-070)

SECTION 6: LOGISTICS

Observations

Logistics is the complex, nitty-gritty business of equipping, supplying, and sustaining fire and rescue operations. It includes providing the daily needs of engaged responders—clothing, shelter, food, health, rest and recuperation, and sanitation—as well as maintaining, repairing, replacing, and refueling equipment and replenishing consumables. Logistics is not a glamorous business; it is working the details. Requirements must be forecast and items procured, delivered, stored, and made available when needed. It incorporates acquisition, shipping, warehousing, inventory control, transportation, and a myriad of other functions. The success of large-scale operations is often determined by the adequacy of the logistical support.

After transferring EMS Control to Battalion Chief Bonzano, Chief Schwartz assigned Chief White the task of organizing logistics support. Chief Schwartz told him to prepare for 10 days of operations. His charge was succinct: "Whatever they need, you get it." Chief White toured the Pentagon's South Parking Lot and chose a site he thought was large enough to serve as the logistics staging area. (See Figure A-10.) He also met with representatives from the American Red Cross and Salvation Army, already on the scene. They agreed to work together to attend to the personal needs of the responders. The American Red Cross also offered Chief White the use of the District of Columbia Chapter's Winnebago to serve as the initial logistics command post.

At the time of the terrorist attack on the Pentagon, the ACFD did not have a logistics officer position or staff function. Captain Lewis Cooper, ACFD A&E Officer, arrived at the Pentagon about 11:00 a.m., after getting two vehicles out of maintenance and a new ambulance into service. His initial concern as A&E Officer was maintaining and refueling all the apparatus arriving onsite and meeting the immediate equipment needs of the firefighters. Around 1:00 p.m., Chief White alerted Captain Cooper that he would be transitioning into the logistics role and should begin thinking about requirements. Later that day, Captain Cooper contacted Mr. Ric Hiller of the Arlington County Office of Support Services and arranged for Mr. Mark Eskridge from the Department of Environmental Services to take charge of the refueling operations onsite. He also asked the Department of Public Works Equipment Division to assign two mechanics to the fire ground around the clock.

By evening on September 11, one of the immediate logistics concerns was obtaining flashlights and batteries. The ACFD and many other jurisdictions were relying exclusively on rechargeable flashlights, with battery power generally good for about 6 hours; it then takes 6 hours to recharge them. This works well under normal conditions, even for a three-alarm fire, but the Pentagon situation was anything but normal. At about 9:50 p.m., 10 minutes before closing time, Captain Cooper contacted the manager of a local Home Depot by cellular telephone and explained the problem. Within 2 hours, a truck arrived with every flashlight and battery Home Depot had in stock.

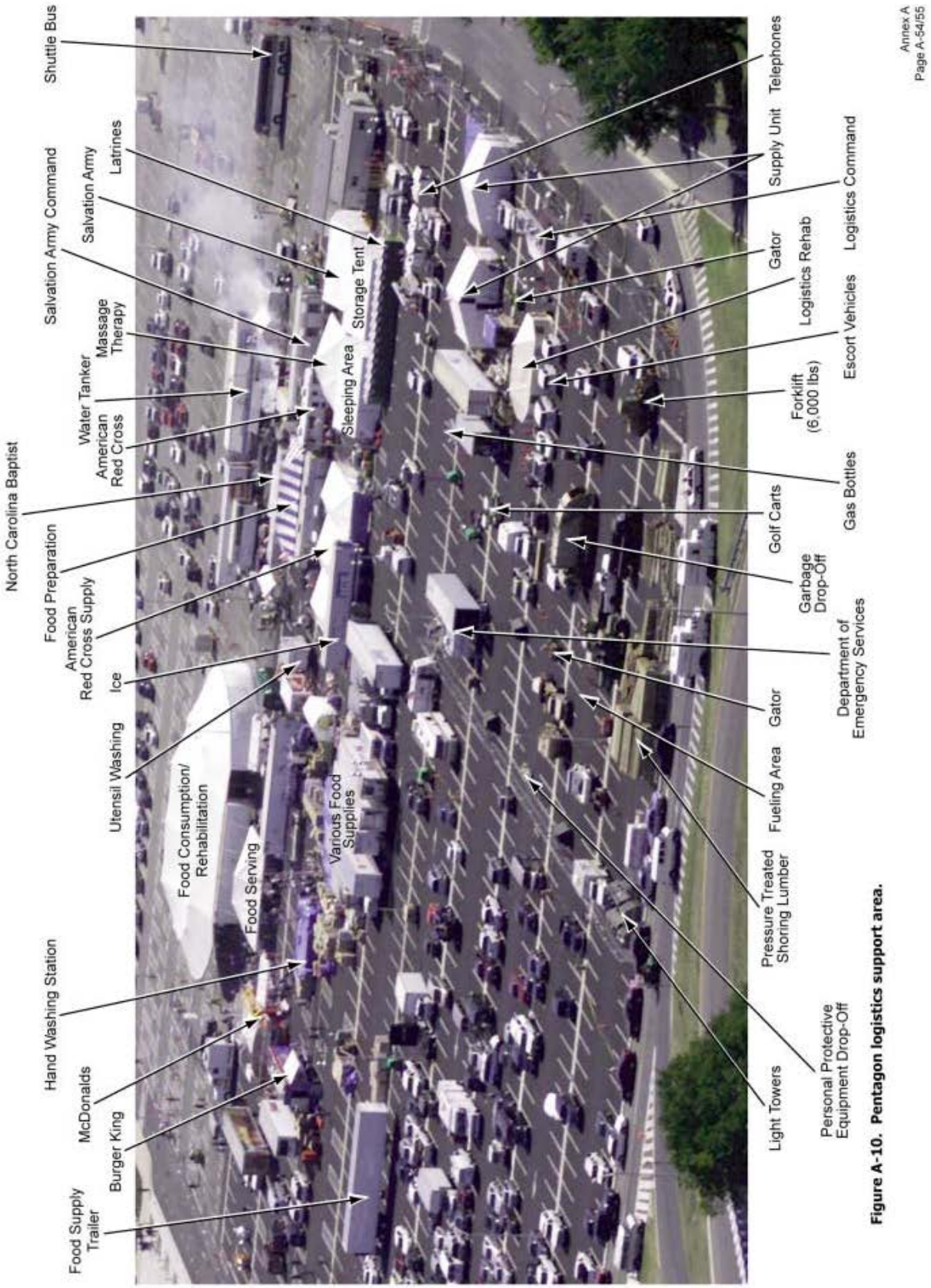


Figure A-10. Pentagon logistics support area.

Knowing the Fairfax County Fire and Rescue Department logistics staff had extensive experience in long-term operations in support of its US&R team, Chief White asked them for assistance. The Fairfax County Fire and Rescue Department had previously provided on-site logistics support to the Fairfax US&R team after the Oklahoma City bombing and during overseas deployments to Turkey, the Philippines, and Africa. Captain Dean Cox, the Fairfax County Fire and Rescue Department Logistics Officer, arrived at the Pentagon on the evening of September 12. He observed the ACFD doing a great job with initial supply requests but they had no experience with the scale of the logistics effort that would confront them during the long haul. He and his team went to work. They literally taught the ACFD how to organize, staff up, and manage long-haul logistics functions, including recording all transactions and preparing the necessary paperwork for future reimbursement by FEMA. The Fairfax County Fire and Rescue Department continued helping throughout the fire and rescue operations, then stayed to support the FBI's criminal investigation.

Logistical support came from many sources and directions. On September 11, the Arlington County EOC arranged for ARAMARK, the food services contractor that supports the county detention facilities, to prepare up to 3,000 meals per day. The volume of contracted food services was significantly reduced as the abundance of other sources grew. On September 12, the North Carolina Baptist Disaster Men's Relief unit, working under the American Red Cross, arrived on the scene and announced that, by dinnertime, all feeding requirements would be met. Their dining services offered a complete range of menu choices and functioned day and night during operations. Over the course of several days, Outback Steakhouse, Burger King, and McDonald's also set up operations onsite as part of the American Red Cross disaster relief mass care support mission under Federal Response Plan Emergency Support Function #6. These American Red Cross-coordinated organizations prepared and fed 187,941 meals at the Pentagon.

Dining facilities.

In addition to feeding the response force, the Arlington Chapter of the American Red Cross, supported by the national headquarters, provided health support and counseling to 15,685 victims, their families, and responders. A total of 1,458 American Red Cross volunteers worked onsite and at local hotels and airports where families and friends of victims and missing workers gathered.

Captain Cooper also asked Arlington County Public Schools for help. They sent Mr. Larry Callan, their electrician. Mr. Callan, one of the unsung heroes of September 11, worked virtually nonstop, stringing lights through the dense smoke so firefighters could search for bodies. He received his reward when the U.S. Air Force sent a convoy of huge generators from Andrews AFB. When no one else knew how to operate these mammoth items, they turned to Mr. Callan. Such a challenge is a school electrician's dream!

The refueling operation was enormous. At its peak, there were more than 500 items that needed regular refueling—fire and rescue vehicles, generators, light towers, cooking stoves, heaters, golf carts and Gators®, and many more. This required truckloads of diesel fuel, gasoline, kerosene, and liquid propane (LP) gas. In the first 24 hours alone, approximately 600 gallons of diesel fuel and gasoline were consumed. Similarly, the resupply activity was enormous. Twelve tractor-trailer loads of lumber for shoring operations, more than 5,000 pairs of gloves, thousands of Tyvek® suits, hundreds of respirators, SCBA, and air bottles were delivered and distributed. Three different vendors serviced more than 100 portable toilets twice daily. All the volunteers and organizations that participated in or supported the fire and rescue operations also needed logistical support. The FBI needed Bobcats® and other heavy equipment; the military needed plastic boxes to safeguard remains and personal effects; and the American Red Cross and Salvation Army needed water, lights, and fuel for cooking stoves.

Local retailers, building suppliers, and companies specializing in firefighting equipment showed up offering to help. Home Depot assigned a senior manager to work onsite at the Pentagon, personally coordinating support as requirements for building materials, equipment, and supplies were generated. Costco delivered a tractor-trailer loaded with ice and cold beverages. Soldiers from Fort Myer organized a convoy of shopping carts filled with supplies from the Post Exchange and the Commissary. Cingular Communications gave away hundreds of cellular telephones to firefighters so they could call loved ones. Verizon also set up a bank of telephones for that purpose. The Firefighters Equipment Manufacturers Association provided direct liaison with its members to expedite shipment of replacement boots and other items.

The John Deere Corporation shipped 12 Gator® all-terrain vehicles from its Virginia manufacturing facility. They literally stopped regular production and built the specialized Gators® for Arlington County. They arrived emblazoned with American flags and a banner signed by each of their assembly line workers. The Gators® were invaluable, supporting the command section, EMS, US&R, the

logistics operation, and many others. When fire and rescue efforts ended, John Deere offered the Gators® to Arlington County for the cost of building them.

John Deere Gator®.

The standard purchasing sequence began when a request arrived at the logistics center. Once approved, it was documented, sent to the Arlington County Resource Management Emergency Task Group (ETG), and the order was placed. When equipment or supplies arrived at the Pentagon North loading dock or the Fern Street receiving area, a member of the logistics staff escorted them to the ordering organization.

Captain Cooper, or one of his two supply officers, Firefighter George Swett (ACFD) and Master Technician Dallas Slemp (Fairfax County Fire and Rescue Department), ordered particularly technical items directly from vendors, then sent a copy of the purchase order to Arlington County. For example, there was an immediate need for 1,200 feet of replacement firehose for hose damaged by vehicle traffic at the Pentagon. Armed with an understanding of the exact specifications, Captain Cooper called Neidner Hose Company in Canada, which was able to reprioritize and ship it overnight.

Ms. Dodie Gill, Director of Employee Support, is responsible for providing critical incident stress management (CISM) services to Arlington County employees. Ms. Gill and her staff were onsite at the Pentagon within 3 hours of the attack offering psychological support and counseling to firefighters and other first responders. She arranged for seated therapeutic massages and chiropractic services that were available during short on-site breaks. She helped first responders contact family members away from the incident site to allay their

concerns. CISM support included visits to firefighters who were treated at area hospitals for dehydration and exhaustion. Ms. Gill helped setup the demobilization site at Thomas Jefferson Middle School. She and her staff met with school and county department staff and provided group debriefings and educational programs. Followup counseling continued for weeks after the incident.

The ACFD leadership has long recognized the value of Arlington County's Employee Assistance Program (EAP) and encouraged its use by firefighters. When the Arlington County EAP was merged with the school system's internal EAP in 1999, developing a comprehensive CISM program for the fire department became a high priority. ACFD managers received advanced CISM training. Mock CIS debriefings were staged once a month. Union relations, substance abuse, diversity issues, sexual harassment, and stress management issues were addressed. The Pentagon incident response clearly shows the benefits of a well-designed CISM program that reflects a true partnership between the ACFD leadership and the EAP staff.

Findings

The ACFD was not well-prepared logistically for a long-term operation. Without a day-to-day logistics function and a centralized supply and storage system, the ACFD staff had little relevant experience in the logistics business as it unfolded on September 11.

The Fairfax County Fire and Rescue Department assisted the ACFD in establishing a logistics function for the long haul, including recording all transactions and preparing required paperwork for future reimbursement by FEMA.

As is the case with almost all fire departments, the ACFD does not maintain sufficient equipment and supplies to engage its entire workforce in an expanded operation such as the one that began on September 11. Its stock levels permit fire and rescue operations engaging the on-duty shift, but not the simultaneous commitment of all three shifts and fully equipped reserve apparatus.

By the time the Logistics Section was fully functional on the morning of September 12, more than 100 purchase requests had already gone directly from operating units to the Resource Management ETG at the EOC, or directly to vendors. This was not surprising since supply requests do not usually go through an ACFD logistics office. However, reconciling invoices from vendors with purchase requests weeks after recovering from an incident is almost impossible.

The EMS response to the Pentagon attack was not severely challenged regarding resources, staffing, or logistics. However, there were instances when pharmaceuticals and other items were in short supply. For example, EMS providers needed more oxygen cylinders and multilator supply systems, and additional

wheeled gurneys. Had the estimated number of casualties reported by the media actually materialized, the situation would have been dramatically different. EMS units are not routinely stocked to treat mass casualties. They carry limited medical supplies. At present, there are no provisions for a readily available regional source of medical supplies. Fortunately, Virginia Hospital Center - Arlington offered access to its supplies to replenish EMS transport units and medical evacuation helicopters from the USPP, and Inova Fairfax Hospital flew medical supplies to the incident site.

Most vendors performed in extraordinary fashion in support of the ACFD. However, in some instances, trucks arrived carrying materials that had not been ordered but the shipper thought "might be useful." Occasionally, vendors increased the number of items ordered, anticipating future requirements. Six months later, the ACFD was still negotiating the return of unused goods with some vendors.

Communications between the Logistics Center and DPS security guards at the receiving stations were not good. Sometimes, critical shoring materials, fuel resupply trucks, LP gas deliveries, laundry service, and other important deliveries were turned back or put into a queue with normal Pentagon delivery vehicles. The Logistics Center instructed vendors to notify them once their delivery truck was 5 minutes from the Pentagon so one of three standby vehicles could be dispatched to escort them.

All ACFD equipment functioned effectively. The thermal imagers were especially useful. However, reserve apparatus do not carry all the equipment necessary to be fully functional. Reserve vehicles went from station to station scrounging equipment so they could be placed in service. Without equipment, reserve fire and rescue vehicles are of little value except as additional means of transportation.

Stock levels of critical items, such as air bottles, breathing apparatus, radios, radio batteries, and battery chargers were inadequate. Standby contracts were not in place with sufficient suppliers to meet anticipated surge requirements. Contracts existed with current suppliers but, when requirements exceeded their capabilities, additional contracts had to be negotiated with other vendors.

Relief personnel often arrived at the Pentagon from the staging area without all their equipment. Often, the first instructions at the Pentagon were to "go find a Scott," or SCBA, which were often taken from other firefighters coming out of the Pentagon, many of whom were reluctant to surrender them.

SCBA incompatibility among various jurisdictions makes mutual support difficult. The Fort Myer Fire Department used Interspiro facepieces and regulators. Alexandria used Mine Safety Appliances (MSA) facepieces. (Alexandria has subsequently ordered Scott.) The ACFD and others used Scott.

Although a portable air resupply unit was on the scene, firefighters spent a great deal of time hunting for air replenishment sources. The distances firefighters

had to travel from the point of entry to the fire attack location made air management particularly important, turning the supply on and off to conserve air during search and rescue operations. This limitation of readily available air supplies forced firefighters to make decisions on air use that probably put them at increased health risk.

The ACFD mobile resupply vehicle (Service 144) was not stocked with adequate spare parts and replacements for high-demand items, such as radios, radio batteries and battery chargers, lights, air bottles, facepieces, and extra PPE (which was often lost during building evacuations).

Special sites and critical structures frequently require special equipment, as did the Pentagon on September 11. Access along A-E Drive to the Center Courtyard was constrained by building overpasses. To provide a ladder truck to the Center Courtyard, its tiller cab had to be cut off. Additionally, the distances in and around the Pentagon would have been better served if there had been more conveyances such as golf carts and Gators® available earlier. Fire engines and other emergency vehicles were often used simply to move individuals around the incident site.

Transportation was not well-planned or managed during the operational lifecycle. As a result, firefighters often resorted to their own ingenuity to get from home station to staging areas, from staging areas to the incident site, from the incident site to extended rehabilitation, and from rehabilitation back to home station. The Washington Metropolitan Area Transit Authority (WMATA) provided two metro buses with drivers, available 24 hours a day to the ACFD. Bus stops were designated and a schedule announced to transport firefighters between the Pentagon, home stations, the Thomas Jefferson rehabilitation center, and other locations. Metro buses sometimes performed in unintended fashion. Whenever a firefighter showed up, the bus driver would ask where he wanted to go and then depart, often with only one passenger. Additionally, the buses were sometimes diverted for unintended purposes. Buses dispatched to the Arlington County Fire Training Academy were subsequently commandeered for other purposes and not available again for hours.

Initially, logistics support was not readily accessible to the Center Courtyard; firefighters at that location had to fend for themselves for food and other items.

The NMRT functioned effectively in a HazMat monitoring and decontamination role, not a medical treatment role, but brought with it extensive medical supplies and equipment. The NMRT's cache of medical supplies was used to supplement the supplies of military medical responders. However, because the NMRT was initially activated by a local jurisdiction, rather than as a result of a national disaster declaration, the Department of Health and Human Services (HHS) later refused to immediately replenish their depleted stocks. A formal request to activate the NMRT as a Federal resource was submitted late on September 12, which resolved the issue. Conversely, without a request from Arlington County

or elsewhere, the National Pharmaceutical Stockpile of medical supplies arrived unannounced at Andrews AFB, directed as a precaution by the HHS.

It is standard practice for equipment to be moved from one vehicle to another during multijurisdictional fire and rescue operations, with proper ownership sorted afterward. The lack of adequate equipment markings and a tracking system contributed to the loss of a great deal of personal gear and apparatus equipment during the Pentagon operations.

The CISM support provided by Ms. Gill and the EAP staff was outstanding. Short-term rehabilitation at the incident site worked very well. There, firefighters could rest, rehydrate, and recycle back to work. Counseling, chiropractic, and therapeutic massage services were available, as well as assistance in personal and family matters.

However, the rehabilitation organized at the Thomas Jefferson Community Center was probably implemented too soon and not completely thought out. Initially, Arlington County established the Thomas Jefferson Community Center as an emergency shelter for stranded citizens and deploying US&R teams. It had overnight sleeping accommodations, food and drink, medical monitoring, and CISM support. As the requirement for sheltering did not materialize, the county decided to use the facility as a rehabilitation center for first responders. Firefighters would be bused to the community center where they would meet with CISM staff, get food and beverages, and receive medical attention as needed. They would then be transported to home stations. By replacing on-site rehabilitation with the services at the community center, firefighters would be encouraged to leave the incident site to get adequate recuperative care.

This plan fell somewhat short in its execution, probably because it was hastily devised and not fully understood by the firefighters. Hot showers were available, but clean clothes were not; nor was transportation offered from Thomas Jefferson Community Center back to home stations. At the end of the first day, firefighters coming off shift wanted to go directly home (or at least to their home station), clean up, and rest. As a result, rehabilitation was not well used at the community center and it was closed after the first night.

The logistics accomplishments of the ACFD team were outstanding. In the eyes of many responders, the logistics staff members were equally as heroic as their more visible colleagues attacking the Pentagon fire. With the help of their colleagues from the Fairfax County Fire and Rescue Department, they built a team of 20 who worked around the clock to create and manage a system that did not previously exist. If asked, Captain Cooper would likely name Firefighter Matt Herrera as his hero. Firefighter Herrera represented Captain Cooper in meetings and back-briefed him. He let no logistics task go undone, whether assigned or unassigned. Firefighter Herrera and his colleagues were heralded at the debriefings time and again by colleagues who stated with admiration: "Anything we asked for, we got. We didn't know where it came from, or who got it, but it showed up."

Recommendations and Lessons Learned

The ACFD needs a full-time logistics officer and staff as well as sufficient central warehousing capacity to meet the requirements of day-to-day business and to plan for and support large-scale operations. Department requests for equipment, supplies, and materials should be regularly routed through logistics before going to the Arlington County Purchasing Office. If these procedures are followed routinely, they will also be practiced during extended operations. (FD-071)

A plan should be implemented for engaging fire and rescue logistics personnel from throughout the region in regular training and information exchanges so they are better prepared for operations of severe magnitude and extended duration. Training should include detailed recordkeeping and documentation to support post-incident reimbursement. The Virginia Public Assistance Office offers a training course in "Disaster Cost Capture." The ACFD was fortunate to have the Fairfax County Fire and Rescue Department available to help them learn on the spot. Others might not be so fortunate. (FD-072)

A cadre of experienced fire department logisticians from throughout the Washington Metropolitan Area should be formed into a regional logistics resource team. Such a team could augment the logistics staff of the responsible jurisdiction in a large and protracted incident. (FD-073)

Equipment and critical supplies should be on hand to support major operations of extended duration. A proper level of PPE and capabilities for sustainment should be acquired for all personnel requested to respond to an incident. (FD-074)

Staffing for the ACFD's Cherrydale Light and Air Unit and the mobile equipment repair and resupply vehicle (Service 144) needs to be studied. These vehicles should carry extra quantities of PPE and critical items such as SCBA, facepieces, air bottles, lights, batteries, and radio battery chargers. (FD-075)

Stock levels for critical items should be reviewed against parameters that include extended operations. Sufficient days of supplies should be on hand to guarantee adequate quantities of material until normal replenishment is achieved. Contracts should be negotiated in advance with current and alternative vendors to ensure priority processing and shipping during operational emergencies. (FD-076)

The ACFD EMS should evaluate the level of supplies carried by EMS units as well as the availability of mass casualty supplies, including oxygen cylinders and multilators, that would be readily deployable. (FD-077)

Site access rules for support vendors must be established early and clearly communicated to all parties. The security staff is charged with minimizing risk by prohibiting the entry of unauthorized personnel. The logistics staff is charged with ensuring the timely delivery of equipment and supplies to the response force. These should never be viewed as competing requirements. (FD-078)

Redundant expertise with equipment and power sources should be planned for so that more than one individual shoulders the responsibility for critical logistic functions, such as lighting. (FD-079)

Reserve apparatus should be outfitted with all the equipment needed to perform expanded operations. Centralized warehousing is needed to store and safeguard reserve equipment when it is not in service. (FD-080)

Procedures for post-incident reconciliation of vendor invoices with purchase requests need to be streamlined and improved wherever possible to accommodate the pressure and chaos accompanying a terrorist incident. (FD-081)

Arrangements should be made with key suppliers to return unused items or acquire them at reduced cost. (FD-082)

Clarification should be sought regarding the resupply of depleted NMRT stocks when those units are activated by a local jurisdiction. The Washington Metropolitan Area is fortunate to have such resources close at hand. Local jurisdictions should be able to employ them when dire circumstances arise but, without timely replacement of NMRT stocks, future missions are jeopardized. Similarly, procedures for deploying the National Pharmaceutical Stockpile should be explored. Nothing should be deployed into a target area that is not coordinated with responsible local officials. (FD-083)

Other jurisdictions throughout the country would do well to emulate the Arlington County EAP model. (FD-084)

Based on the Pentagon experience, a comprehensive support and assistance plan for firefighters and their families should be formalized. It should include on-site support, including rest, therapeutic massage, counseling, family aid, extended rehabilitation, and arrangements for overnight accommodations for fire and rescue personnel, particularly those who reside outside the county. Such a plan could serve as a model for other major metropolitan areas around the country. (FD-085)

The Pentagon is a unique facility within Arlington County and remains a viable terrorist target. With the experience of the September 11 attack, the ACFD should produce a plan for similar long-term events at the Pentagon. Additionally, other Arlington County facilities that might present unusual or difficult circumstances should be surveyed so that, where appropriate, an emergency operations plan can be put in place for each. Special logistical and equipment needs should be identified and provided in advance. (FD-086)

A logistics annex should be prepared as part of a large-scale operations plan. It should designate locations, qualified in advance for various logistics functions, including dining, extended rehabilitation, equipment repair, and maintenance. It should also include a plan to transport firefighters between locations. (FD-087)

SECTION 7: SITE SAFETY, SECURITY, AND PERSONNEL ACCOUNTABILITY

Observations

Firefighting is a risk-filled occupation. Every fire scene is dangerous. Smoke, flames, structural collapse and hazardous fumes, often in combination, confront the courageous men and women of the country's fire and rescue community. They, in turn, rely on good training, special equipment, and each other for their personal well-being. Such is the nature of the business. On September 11, the men and women of the ACFD and their colleagues from supporting jurisdictions encountered a situation at the Pentagon unprecedented in potential danger. This was an overt terrorist attack; the third in a series of such attacks, all launched within an hour, in which hijacked commercial airliners became terrorist weapons. Emergency responders could only anticipate additional attacks.

The Pentagon is not only massive and unique in design, there is also an air of mystery about it. It is a 60-year-old structure of steel, concrete, and other building materials. Emergency responders had good reason for concern; the demolition and abatement of Wedge One during renovation had generated 332 million pounds of debris and 115 million pounds of HazMat. The impact area of American Airlines Flight #77 included part of the newly renovated Wedge One and part of the adjacent and unrenovated Wedge Two.

The Pentagon is the heart of our national defense establishment and cannot be interrupted or shutdown. It houses countless ongoing classified activities and is the hub of exotic communications systems. Some elements in the Pentagon, specifically our Nation's Military Command Center, operated throughout the emergency on September 11, even as the fire raged on the other side of the building. On that evening, the Secretary of Defense announced that the Pentagon would be open for business the next day. This announcement placed additional burdens on the ACFD response force and the FBI Evidence Recovery Team.

It is difficult to imagine how the circumstances could have been more challenging than those prevailing in the first few hours after the attack. Thousands of Pentagon workers attempted to flee the site while hundreds more tried to help trapped colleagues. Drivers and passengers abandoned cars on the traffic-jammed highways surrounding the Pentagon. By mid-afternoon, the total response force onsite had grown to about 3,000 people, military and civilian, professionals and volunteers, representing every level of government jurisdiction. Controlling movement throughout the area was difficult.

Findings

In the first frantic hours of the incident, safety was left largely in the hands of the supervising tactical officers. Initially, circumstances were such that it was virtually impossible to completely control movement throughout the area, or

even know who was where among the growing response force at any given point in time. Fortunately, safety has long been high priority in the ACFD and the other local jurisdictions. Captain Swarthout, the ACFD Safety Officer, had nearly 30 years of experience in the department. He also had well-established working relationships with his Northern Virginia and District of Columbia counterparts. To come away from such an operation without a single fatality or serious injury is not an outcome many would have predicted. It is testimony to the training, discipline, and competence of the response force and those who led it.

The activities of the Incident Command Operations Section and the Fire Suppression Branch located at the Pentagon heliport closest to the point of impact served as a virtual magnet, drawing both workers and bystanders, many without PPE. An ACFD fire marshal, with the help of a DPS officer, roped off the area to restrict access and attempt to preserve the limited workspace for those needing it. ACFD fire marshals are empowered with full law enforcement authority.

Numerous issues impacted site safety and security. At about 9:55 a.m. on September 11, Captain Gibbs, commanding the River Division, was directing the search and rescue efforts of ACFD and Fort Myer firefighters when he observed what appeared to be a slight structural movement at the initial impact area. He ordered everyone out of the building. Within minutes, the upper floors collapsed onto those below. Captain Gibbs' quick and decisive action prevented serious injuries to firefighters in a part of the impact area where there were no surviving victims.

The renovations completed in Wedge One had some important safety implications. The newly renovated space had fewer than the usual occupants. The process of moving about 5,000 workers into Wedge One from Wedge Two would not be completed until October when renovation of Wedge Two would begin. As a result, fewer occupants than usual were at risk on September 11. Additionally, when fire and rescue responders entered the renovated area, even those personnel generally familiar with the Pentagon found themselves in a very different facility, physically and structurally.

Pentagon staff were able to freely enter the Center Courtyard from corridors on the north and east sides of the building. By the time Battalion Chief Smith arrived at the courtyard with his force of ACFD and DCFD responders, a crowd estimated to be 300 to 400 strong had gathered in the 5-acre space. When Battalion Chief Smith heard the first evacuation signal caused by the threat of incoming unidentified aircraft, he realized that circumstances and location made evacuation problematic. Even if that were not the case, the sight of fleeing rescuers would only add to the trauma already experienced by the crowd in the Center Courtyard. He chose not to evacuate.

There were numerous incidents of people moving throughout the area without proper PPE and safety equipment. One busload of Alexandria firefighters arrived without SCBA and attempted to borrow spares from a Fairfax County unit already

onsite. When that was unsuccessful, they proceeded to enter the Pentagon and join the ongoing firefight.

The preferred sequence of search and rescue operations is to shore up one area, search for survivors, clear it of debris, and move to the next area. At the Pentagon, there were many instances of firefighters breaching areas not yet shored up.

Shored up area of Pentagon.

On September 13, Captain Swarthout began holding daily safety meetings attended by representatives of more than 20 organizations. The meetings covered such topics as minimum acceptable levels of personal protection (Tyvek® and respirator), decontamination procedures, personnel accountability, and prohibitions against dangerous practices, such as refueling generators and vehicles while motors are running.

VIP visitors sometimes presented an unnecessary risk. In one case, a senior government official, who happened to be pregnant and wearing high heels, was escorted around the site. Other senior officials, including Major General Jackson and County Manager Carlee, set the example by fully complying with the rules for minimum protective clothing and equipment.

Beginning very early during the fire and rescue response, building occupants began requesting that items be retrieved from Pentagon offices. Some requests

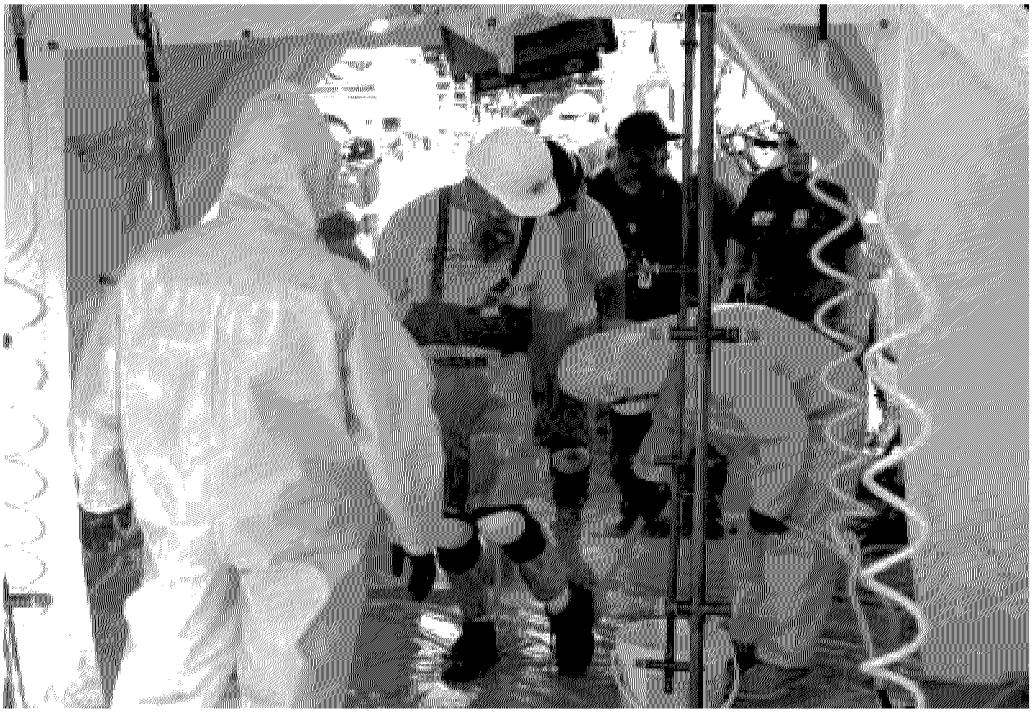
were based on valid reasons of national security. The impact area included both the Navy operations center and the office complex of the National Guard and Army Reserve. It was also the end of the fiscal year and important budget information was in the damaged area. A few building occupants wanted only to retrieve personal effects. A process was established to review every request at the JOC. The Incident Command representative considered the office location from the perspective of structural integrity and safety. If approved, the retrieval would be scheduled for the next work shift. This process demonstrated the value and feasibility of effective coordination between the Incident Command and the JOC.

This was not initially treated as a HazMat emergency. In retrospect, early deployment of one or more HazMat teams might have been in order. If this had been a simple incident of a ruptured aircraft wing spewing jet fuel, a HazMat presence would have been immediate. The combination of the aircraft explosion and fire in a 60-year-old structure certainly presented dangerous and unhealthy conditions.

Air monitoring and decontamination operations began shortly after arrival of the first NMRT Task Force, which set up three medical tents and three decontamination corridors. Additionally, Fairfax County responders were sent to Fairfax County Fire and Rescue Department Station 8 for technical equipment decontamination, medical assessment, and CISM. However, not everyone went through the decontamination process. For example, it was reported that some members of the military pressed into service to aid the FBI in body recovery and debris removal did not go through the decontamination process.

Air monitoring readings were taken by several organizations including the EPA, Federal and State occupational health and safety agencies, NMRT staff, military HazMat teams, and others. The results were sometimes in conflict. Some officials from environmental and health agencies pressed for a strict policy that would guarantee protection under the most severe conditions, including having all responders operate in Tyvek® suits, regardless of their particular assignment. The Incident Commander adopted safety measures designed to achieve a similar outcome without subjecting everyone to the heat stress of Tyvek® suits. These measures included comprehensive personnel decontamination and requiring that every piece of equipment used by the US&R and TRTs be laundered every night.

Although EMS operational areas were established and recognizable, the medical evacuation helicopter landing zone was not well marked. Adequate safety precautions, such as using cones or barriers to mark boundaries and prevent entry, were not employed.



NMRT decontamination corridor.

During the first 2 days, area security was extremely challenging. Police controlled entrances from major roads and highways, but access was granted liberally to those with some claimed involvement in the fire and rescue effort, or continued work inside the Pentagon. It was presumed that individuals moving around in the area had been cleared to do so by some appropriate authority. That was not always the case. Many were well-intentioned people who simply wanted to help. A few were scavengers hunting for souvenirs. As a result, the incident site was overpopulated, adding significantly to safety concerns and increasing the difficulty of accounting accurately for those actually engaged in rescue operations.

Chief Plaugher recognized the serious potential implications of this problem. Early on September 11, he ordered 2,000 feet of chain-link fence to construct an outer perimeter boundary. (See Figure A-11.)

If security was challenging in the early days, it became more structured and systematic by the third day, and in some aspects, burdensome. Everyone entering the fire ground needed a new color-coded identification badge. Because of the limited computers to create badges and lack of a single database, processing added an additional burden to crew relief. Some teams working onsite often waited more than 2 hours for replacements to get properly badged, adding to an already long workday. Plans to process outgoing teams for badges

before they left the site were not well-received. Changing the badge color the next day was viewed by some as an unneeded additional encumbrance.

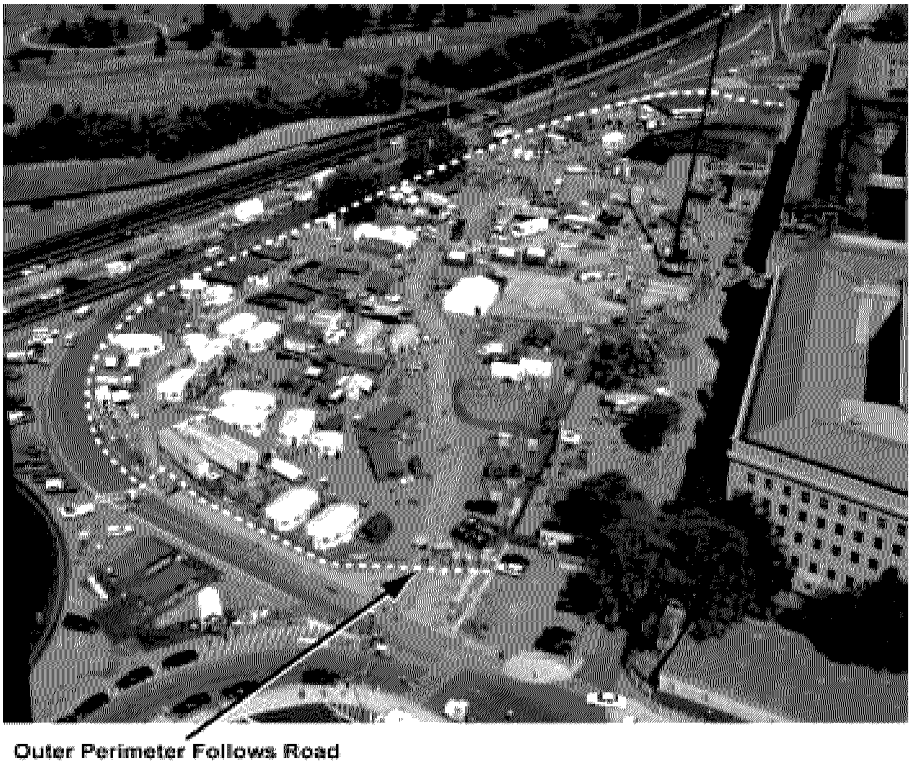


Figure A-11. Outer perimeter security fence.

Accounting for all personnel at all times is a critical factor in fire and rescue operations. On an operational site as large and complex as the Pentagon, accountability becomes even more challenging, but no less important. At the team level, the ACFD did an exceptional job. Team leaders kept their personnel together, controlled unit movement, and knew where everyone was, at all times.

Similarly at the sector level, accountability was strictly enforced. No one entered the Pentagon's Corridor 5 without Captain Gibbs or Firefighter Keith Young writing down the name of every individual, and his or her team and team leader. Unfortunately, that was not always the case elsewhere. Other building entrances were often unguarded, with teams and individuals entering on their own. Some teams dropped members off and left them at one work location in the Pentagon, planning to pick them up later. The ACFD and teams from other jurisdictions sometimes picked up "strays" along the way, looking after them until they rejoined their home teams. Occasionally, reports of missing teams were passed through the building.

EMS providers operating in the triage and treatment areas created armbands from triage tape to identify the area to which they were assigned. Providers agreed wearing color-coded armbands helped maintain accountability.

At the Incident Command level, accountability was virtually impossible because of the failure of some units to coordinate their actions with Incident Command.

The repeated building evacuations raised accountability issues. In addition to those responders located in the Center Courtyard, those attacking the fire on the roof were also unable to evacuate. When one of the evacuations was signaled, they ran to the edge of the roof, only to discover that the ladder had been retracted to the truck 77 feet below. Some teams, having experienced the rigors of an earlier evacuation, simply chose to stay in the damaged building, assuming a second strike would hit elsewhere.

Due to the number of "freelance" units and individuals onsite, the current accountability system, relying on individual identification (ID) tags, did not work as designed. Had there been a second terrorist attack or a significant and unexpected building collapse, it would have taken a long time to determine who might have been lost.

Recommendations and Lessons Learned

All responding units, including those that self-dispatch, must report to the Incident Command Staging Officer. Failure to do so reduces management control, increases risk, and severely hinders accountability. (FD-088)

The practicability of the current passport accountability system needs to be studied. The ACFD and other regional jurisdictions should consider developing a completely new badging, clearance, and accountability system. Smart cards, barcode readers, and other technologies available today should eliminate the kind of security, access, and accountability problems experienced at the Pentagon. New ID cards should be uniform throughout the region and it should be mandatory that public safety personnel carry them at all times. Special qualifications and skill certification could be coded on the badge. (FD-089)

Effective physical security procedures must be established as soon as possible to control entry into the area. Law enforcement officials at entry points need specific guidance from the Incident Commander defining who gains entry and their reporting instructions for within the fire ground. (FD-090)

Controls must be established both for the perimeter and in proximity of the fire and rescue operations. Roaming from one area to another should not be allowed. Unauthorized personnel should be escorted from the area. (FD-091)

All entrances into the burning building need to be tightly controlled and occupants should be directed or escorted under supervision to safe areas away from the fire incident site. (FD-092)

In a terrorist-initiated event, HazMat units must deploy and begin air monitoring and decontamination operations immediately so there is no gap prior to the response of other environmental, health, and safety organizations. In an era of WMD, decontamination and air quality monitoring capabilities need to be enhanced in county HazMat units. (FD-093)

WMD incident response plans should accommodate the legitimate requirements to retrieve materials from the incident site. The process put in place by the JOC and the Incident Command is a good model. (FD-094)

First response units must expect and plan on having important visitors during serious and protracted incidents. This is particularly true in the Washington Metropolitan Area. It is the legitimate business of responsible elected and appointed officials to represent the interests of their affected constituents. However, VIPs must be respectful of the circumstances and should not interfere with operational requirements. (FD-095)

Site Safety Officers need to be assigned to every shift with the arrival of the first units onscene. (FD-096)

Full briefings by relevant members of Incident Command should be held for each new shift of replacement firefighters as they relieve their predecessors. (FD-097)

The ACFD should consider how to best use its fire marshals during large-scale operations. Their ascribed law enforcement authority, combined with their knowledge of fire and rescue operations, constitutes an important dimension upon which to capitalize. (FD-098)

Landing zones for helicopters must be identified and secured with clearly marked boundaries to prevent them from becoming a safety hazard for helicopter crews, the patients they transport, and responders or bystanders on the ground. (FD-099)

SECTION 8: PLANNING, TRAINING, AND PREPAREDNESS

"Plans are a combination of experience from past incidents and assumptions about future ones. We now have important new experience with which to replace previous assumptions."

James Schwartz
Assistant Chief for Operations
Arlington County Fire Department

Observations

There is an intrinsic relationship between planning, training, and preparedness. The state of preparedness reflects an organization's ability to perform its intended mission. It is determined by the attributes of assigned resources:

- Have plans been written?
- Are these plans complete and up-to-date?
- Are sufficient numbers of people assigned?
- Are they available?
- Have they been adequately trained?
- Have personnel been trained on the plans?
- Have these plans been exercised?
- Has equipment been acquired?
- Is equipment available and operational?

When deficiencies exist in resource attributes, there can be a corresponding degradation in an organization's preparedness that can only be offset by the extraordinary judgments and actions of individuals. Although there were many heroes at the Pentagon on September 11, heroism is not a commodity that can be purchased and warehoused. Preparedness is a direct function of planning and training.

Ideally, organizational preparedness is regularly and systematically measured. Systems can be designed to facilitate this process, helping leaders manage readiness. An organization's state of preparedness can also be later deduced by analyzing its performance. From this perspective, it is clear that, at the time of the Pentagon attack, the state of preparedness of the ACFD was very high. There were no fatalities or serious injuries among the responders. The fire was contained and controlled relatively quickly. The collapse potential was recognized early and precautions were taken. Individuals from different

organizations were able to work together effectively as ad hoc team members. There are numerous incidents in which ACFD personnel demonstrated uncommon initiative in the absence of guidance from more senior authorities. All these are indicators of a high level of individual training, discipline, and professionalism.

Many organizations, including some fire and rescue departments, find it difficult to accept change. Updating equipment is one thing, but fundamental operational change is often hard to achieve. The status quo is like a comfortable old coat, difficult to discard even as it becomes distinctly out of fashion. The ACFD is a refreshing exception. In 1995, under the leadership of Chief Plaugher, Arlington County developed for the Washington Metropolitan Area the Nation's first Metropolitan Medical Strike Team (MMST). The MMST concept and plans have been instrumental in the development of the MMRS, now adopted by more than 100 cities across the Nation. The MMST is the predecessor to the NMRT. As a direct consequence, the ACFD was a better-prepared and more capable response force on the morning of September 11 than might otherwise have been the case.

Regular and frequent participation in exercises and other activities with neighboring jurisdictions had produced sound working relationships that were evident during the Pentagon response. For example, the Arlington and Alexandria TRTs were able to completely integrate their personnel, forming 3 teams of 19 personnel each. Because of the high quality of their work alongside the experienced US&R teams of Fairfax and Montgomery Counties, the combined TRT was assigned to help the Tennessee US&R, which was on its first deployment. Each year, the MDW hosts a major regional tabletop exercise that involves most local public safety organizations and government leaders. Such events help build relationships that are key to successful emergency operations.

The close working relationships of the Virginia jurisdictions were evident throughout. Because of its experience in extended duration operations, Fairfax helped organize and manage the logistics support for the ACFD. Chief Brown of Loudoun County, Chief Chris Leischner of Alexandria, and Chief Tom Owens of Fairfax City all supported Chief Schwartz in the Incident Command Plans Section. The groundwork clearly exists for a broader regional approach to emergency planning and management.

The Pentagon attack was, in many ways, without precedent for the men and women of the ACFD. Only those veterans who had participated in the response to the 1982 Air Florida crash at the 14th Street Bridge could even begin to relate to its scope and magnitude, and that was largely a rescue operation under DCFD jurisdiction. The Pentagon has been in Arlington County, on the banks of the Potomac River, and in the Ronald Reagan Washington National Airport flight path for 58 years. Over the years, accidental aircraft crash landings into the Pentagon have occasionally been simulated. However, the physical affects of the September 11 terrorist attack on the Pentagon by far exceeded what anyone might possibly have imagined.

Findings

The ACFD did not have a fire suppression and rescue plan in place for a Pentagon emergency of this size and duration. Its SOPs were certainly applicable and served well, even in these highly unusual circumstances; however, firefighting operations are almost always relatively brief and highly intense. This event was lengthy, slow-going, and required a more strategic and long-term perspective.

Although there are fairly frequent drills with the Pentagon, many ACFD responders were unfamiliar with the building layout. Pentagon renovation information, such as access points and hose-fitting locations, was regularly disseminated within the ACFD; however, only a handful of firefighters had received a thorough orientation on the renovation project prior to the attack.

In the absence of a Pentagon plan, the ACFD relied primarily on the skills and experience of its members. Battalion Chief Cornwell and Captain Gibbs knew precisely what to do at the point of attack. Battalion Chief Lyon performed in stellar fashion while organizing replacements at Station 1 and, subsequently, supporting Chief Schwartz at the incident scene. These are veterans, uniquely qualified even among their peers. Similarly, ECC Administrator Souder did not need a plan to call forward a specific mix of units from Fairfax, Arlington, and the District of Columbia. Based on years of experience in the fire and rescue service and at the ECC, he anticipated what would be needed and instructed each jurisdiction to plan on that level of commitment for the duration. But ECC Administrator Souder has now departed, moving to a similar position in Montgomery County, MD. Individuals will move on and, over time, experience will erode, unless their experience and knowledge are captured in plans for handling the challenges of large-scale events.

The individual skill levels of ACFD responders reflect the high quality of training offered to the young men and women entering the fire and rescue service.

Prior planning and training allowed responders to effect a large, multijurisdictional response. The ACFD routinely participates in Pentagon mass casualty tabletop exercises such as "Abbottsville" in May 2001, and full-scale exercises such as "Cloudy Office" in 1998. Previous response efforts, training, and joint exercises have improved mutual-aid operations and enhanced mass casualty response.

Dr. Vafier accompanied an EMS response unit to the incident scene. Some responders indicated that one benefit of having a medical director on the scene was the provision of leadership. Dr. Vafier, as a certified advanced trauma life support physician, was able to communicate with other physicians in addition to acting as an EMS advocate. The Arlington County Operational Medical Director, Dr. York Allen, joined Dr. Vafier at the incident site. There were a few instances when military and other medical personnel sought out Dr. Vafier and bypassed

trained EMS providers in positions of authority. However, responders agreed his presence was beneficial from a medical and strategic perspective.

Frequent interaction, including training and exercises, with mutual-aid partners in Alexandria and Fairfax County proved invaluable. Units from these jurisdictions merged seamlessly in a common effort. A similar level of interaction does not routinely occur between Virginia jurisdictions and the DCFD. That failure was also apparent during the Pentagon operations.

Most ACFD officers were familiar with the capabilities of specialized units, such as the NMRT and US&R teams. But, until they arrived and set up for operations, it was impossible to appreciate their true capabilities. Briefings and orientations alone are insufficient.

The ACFD TRT, under the leadership of Chief Lyon, took advantage of the US&R presence to increase its capabilities through the Pentagon experience. The more experienced US&R teams, those from Virginia Beach, Fairfax, and Montgomery County, helped improve the capabilities of teams from New Mexico and Tennessee, each on its first deployment, as well as the TRTs from Arlington and the MDW.

Recommendations and Lessons Learned

The ACFD should capitalize on this experience to cooperatively prepare with DPS and MDW a Pentagon fire and rescue plan. The Pentagon continues to be a potential terrorist target. It is still located along the Ronald Reagan Washington National Airport flight path. It will always be unique, with modernization efforts continuing for many years, compounded by reconstruction of the damaged areas. With full knowledge of what worked well, what can be improved, and what specific information and equipment are required, this is an opportunity to achieve great progress in creating a comprehensive plan for responding to terrorist incidents. (FD-100)

Arlington County should take the initiative to put in place a multifunctional MOU between the ACFD and the Pentagon. There should be little room for disagreement since both parties just experienced what appears to be an appropriate division of labor. Working relationships, developed of necessity and reflecting the good will of the leaders involved, should now be transformed into a formal agreement. (FD-101)

A plan should be drawn up and implemented that perpetuates the contacts Arlington County had with all the disparate organizations that responded to the attack, such as public safety organizations, charitable organizations, military commands, private businesses, political entities, and others. They can be invited to participate in future ACFD exercises and provided periodic capabilities presentations. The total spectrum of support available when a crisis strikes the Washington Metropolitan Area is now clear. They should be made part of a broader ACFD constituency. (FD-102)

Arlington County should identify other unique and critical facilities and unusual sites in the ACFD jurisdiction and develop emergency response plans for them as well. There are government office complexes in Crystal City, the Navy Annex, and Bailey's Crossroads. Typically, government buildings have one characteristic in common—the outside façade remains the same, while the inside changes with every reorganization. Ongoing review of site plans and engineering blueprints must be planned for and accomplished. The high-rise offices of Rosslyn present a different challenge altogether, which needs to be captured in a response plan. (FD-103)

Whenever possible, academic training at the Arlington County Fire Training Academy and elsewhere should incorporate real world experiences drawn from such events as Oklahoma City, the World Trade Center, and the Pentagon. Hypothetical case studies have a continuing role, but reality is a critical test of capability and usually a much more compelling experience for participants. (FD-104)

Additional regionwide training in mass casualty operations and unified Incident Command should be provided. Training initiatives should include all professionals involved in emergency response. (FD-105)

Medical directors and fire department officials should review EMS protocols and SOPs to ensure agreement concerning the role of physicians working alongside EMS providers at an incident site. (FD-106)

Regional response drills should be planned and executed annually. Mutual-aid jurisdictions should be included in response exercises whenever possible. (FD-107)

Alert and notification systems should be regularly and randomly tested to ensure rosters are current and contact numbers are accurate so plans for recalling off-duty EMS staff can be implemented in an emergency. (FD-108)

The ACFD should increase cross-training among compatible skill sets, incorporating specialized equipment and skills required by terrorist threats. This is certainly appropriate for emergency medical technicians and HazMat technicians, but cross-training can probably be extended to many others. (FD-109)

Periodic exchanges should be encouraged between the ACFD EMS and NMRT, and between the ACFD TRT and local area US&R teams, taking advantage of national resources located in the region. (FD-110)

A major joint planning, training, and exercise initiative between the DCFD and the Northern Virginia fire departments should be undertaken. The single area offering the greatest opportunity for dramatic near-term improvement is the relationship between the Northern Virginia fire departments and the DCFD. Working relationships forged through planning, training, and exercises carry over to the fire scene. (FD-111)

ANNEX B

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INTRODUCTION

All operational medical treatment components play a critical role in an emergency response to weapons of mass destruction (WMD) terrorist incidents. The Emergency Medical Services (EMS) units focus on the immediate health and medical requirements of terrorist victims. EMS units perform emergency medical triage and treatment at the incident scene and transport victims to definitive treatment facilities. Hospitals implement emergency operating procedures to receive patients for treatment and long-term care. The September 11 terrorist attack on the Pentagon engaged and tested the preparedness of Washington Metropolitan Area hospitals to implement disaster response plans.

On September 11, hospitals throughout the region were alerted to the prospect of mass casualties by television media reports describing the terrorist attacks on the World Trade Center and speculation that the Washington Metropolitan Area might be another terrorist target. With this warning, hospitals activated their disaster plans and implemented other emergency response preparatory actions.

Immediately after the 9:38 a.m. impact of American Airlines Flight #77 on the Pentagon, the Arlington County Emergency Communications Center (ECC) began contacting area hospitals, including Virginia Hospital Center - Arlington, Inova Alexandria Hospital, Inova Fairfax Hospital, Washington Hospital Center, and George Washington University Hospital. The Washington Hospital Center Burn Unit is one of 139 facilities in the Nation designated to receive severe burn victims. In less than an hour, hospitals began receiving victims transported by EMS units. By 2:00 p.m., 106 surviving victims requiring treatment had been transported to hospitals and other treatment facilities. Fifty-seven patients were treated and released. Forty-nine were admitted for further treatment.

The DiLorenzo TRICARE Health Clinic (DTHC) at the Pentagon and Andrew Rader U.S. Army Health Clinic (Rader Clinic) at Fort Myer, VA, also performed an emergency response role. DTHC staff performed triage and treatment in the clinic and at other locations within the Pentagon, including the Center Courtyard. Staff from the Rader Clinic assembled a team of medical care providers, which reported to the Pentagon incident site, while the Rader Clinic also prepared to provide medical treatment to injured victims.

There is general agreement that the hospitals and clinics responded in a commendable manner to the health and medical needs of the victims of the Pentagon attack. Fortunately, the area's hospital capacity and capability for receiving and treating mass casualties greatly exceeded the number of patients actually referred for treatment. However, this terrorist event revealed a number of pertinent recommendations and lessons learned.

This Hospitals and Clinics Annex contains 26 recommendations and lessons learned.

SECTION 1: INITIAL RESPONSE

Observations

Media and television reports on the World Trade Center terrorist attacks, followed by reports suggesting that Washington, DC, and other locations might be targets, provided early warning to area hospitals and clinics of a potential attack. This warning prompted the implementation of hospital disaster plans. Immediately following the attack on the Pentagon at 9:38 a.m. on September 11, area hospitals undertook preparatory actions to receive patients. These hospitals and clinics included Virginia Hospital Center - Arlington, Inova Alexandria Hospital, Inova Fairfax Hospital, DTHC, Rader Clinic, and Arlington Urgent Care. Additionally, Washington Hospital Center and George Washington University Hospital, located in Washington, DC, began preparations to receive patients. (See Figure B-1.)

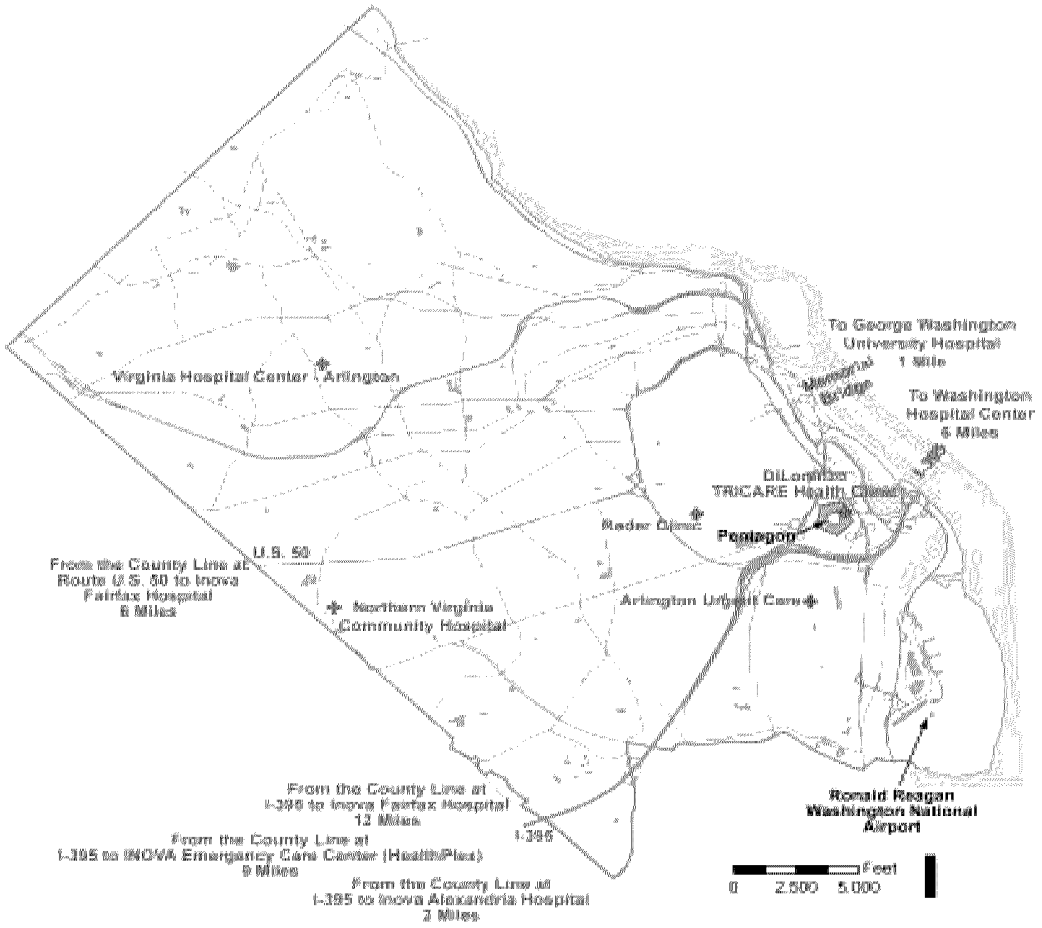


Figure B-1. Area hospitals, clinics, and treatment facilities.

Although some hospitals and clinics reported they were not officially notified by the Arlington County ECC, all of them did learn of the attack from a variety of sources. Upon learning of the attack, all area hospitals began preparing to receive victims.

- Virginia Hospital Center - Arlington immediately implemented its disaster plan upon receipt of a telephone call from an Arlington EMS Supervisor en route to the Pentagon.
- Inova Alexandria Hospital received emergency notification via a call from the Alexandria dispatch center and implemented its disaster plan. All operating rooms (ORs) were made ready. Emergency room (ER) patients were moved to a secondary treatment area, freeing up the primary ER space. Inova Alexandria Hospital also relocated or discharged 75 patients to provide bed space for anticipated mass casualties.
- Inova Fairfax Hospital activated its disaster plan following reports of the World Trade Center attacks. Subsequently, the hospital received emergency notification of a missing airliner from the Washington Dulles International Airport Tower. They canceled elective surgeries until 6:00 p.m. and made eight trauma teams available within 20 minutes. The regular ER was relocated to an alternate site and nearly 100 nurses and doctors were prepared to respond in the event of an attack in the Washington Metropolitan Area.
- George Washington University Hospital learned first from an employee watching television reports. George Washington University Hospital was unsuccessful in confirming reports through the District of Columbia Hospital Association Hospital Mutual Aid Radio System. The hospital prepared to receive patients from the Pentagon attack while considering response requirements related to the potential for additional attacks in the District of Columbia. George Washington University Hospital suspended elective surgeries and implemented its disaster plan, mindful of requirements that could emerge related to additional attacks.
- Washington Hospital Center received notification through the Ronald Reagan Washington National Airport Tower CRASHNET. Concurrently, Dr. Marion Jordan, the Burn Center Director, was watching television news reports describing the attack on the Pentagon. Washington Hospital Center implemented its emergency management plan. The hospital Emergency Operations Center (EOC) was activated. Clinic appointments and all elective admissions and procedures were canceled. Hospital discharges and transfers were expedited. The trauma center, burn unit, and emergency department mustered to receive mass casualties. By midday, 19 intensive care unit (ICU) beds and 136 floor beds were available.
- When the attack occurred, DTHC staff at the Pentagon was advised to evacuate. Major Lorie Brown, Chief Nurse, formed medical teams and prepared to receive patients. Two five-person medical teams, under the direction of Captain Jennifer Glidewell, were sent to the Pentagon Center Courtyard at Corridor 5 to perform triage and treatment for patients who would be

evacuated through the tunnel at Corridors 1 and 2. A 10-person medical team worked at the DTHC providing triage, urgent, acute, and primary care. Other volunteers were organized into augmentation medical teams. DTHC medical teams offered triage and treatment near the Pentagon Officers Athletic Center (POAC) for patients evacuating along Corridor 8.

Major Brown, assisted by other DTHC staff members, coordinated emergency medical response actions at a number of locations, including the Pentagon Center Courtyard, the DTHC, the site near the POAC, as well as locations requested by the Defense Protective Service (DPS) on various floors of Corridors 3 and 4 and Corridors 5 and 6. (See Figure B-2.)

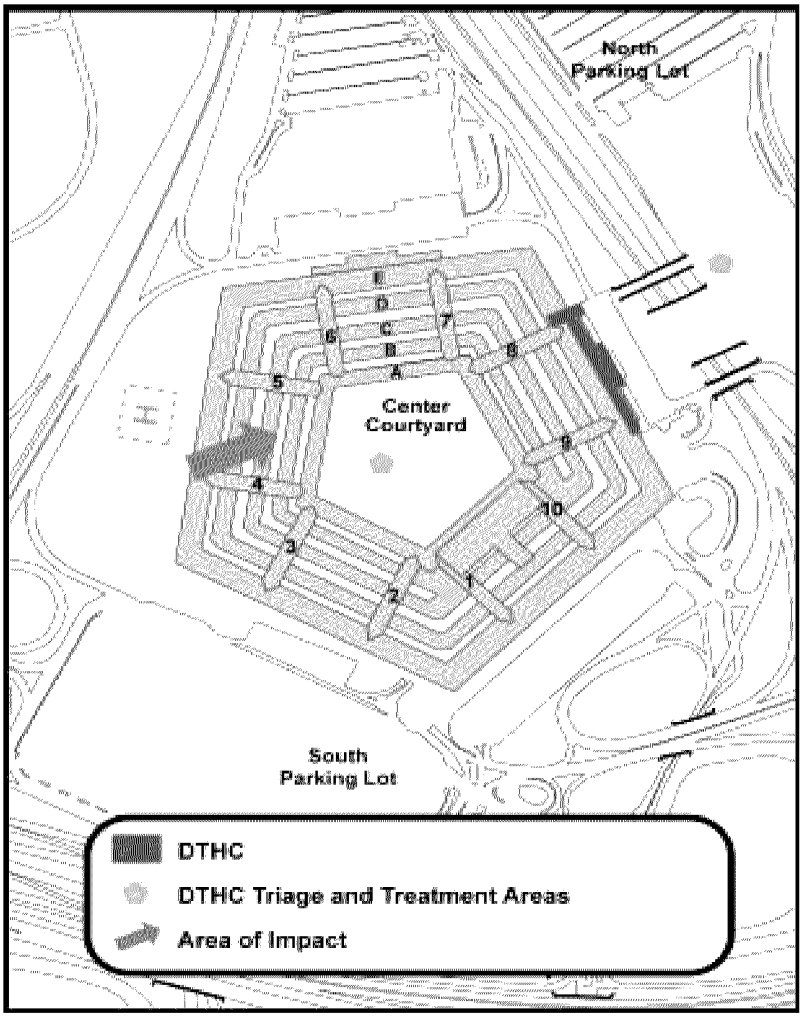


Figure B-2. DTHC triage and treatment areas.

DTHC Commander, Colonel James Geiling, M.D., was at Walter Reed Army Medical Center when the Pentagon terrorist attack occurred. He was delayed for nearly 5 hours by traffic congestion, security, and closed bridges across the Potomac River. Colonel Geiling finally reached the Pentagon at approximately 2:00 p.m. He assumed command of the DTHC medical response and began preparing for clinic operations the following day.

- Because they are located close to the Pentagon, staff members at the Rader Clinic and Arlington Urgent Care heard the airliner and explosion, and felt the airliner's impact. A "Code Yellow" (mass casualty situation) was immediately called at the Rader Clinic following an announcement on television that all Federal buildings were to be evacuated because of the terrorist threat. The building was evacuated and cleared within minutes by staff members. Simultaneously, Colonel John Roser, M.D., Commander of the Rader Clinic, assembled a medical team of five physicians and a physician's assistant, and proceeded on foot toward the Pentagon. An 11-person team of combat medics assembled and deployed to the crash site in 2 patient transport vehicles, picking up Colonel Roser's team on the way. Upon arrival at the Pentagon, all Rader Clinic response personnel divided into triage and treatment teams under the control of the ACFD EMS officers, and provided treatment for victims emerging from the crash site.

  At the Rader Clinic, the staff initiated Code Yellow actions. Lieutenant Colonel Lorraine Jennings, Deputy Commander for Nursing and Primary Care, assumed control. A personnel pool was formed. Three triage areas staffed by clinic medics were set up in the adjoining parking lot. An EOC was established in the clinic headquarters.

- Arlington Urgent Care clinic, located near the Pentagon, was virtually on the scene at the time of the airplane crash. As staff members watched television reports of the terrorist incidents at the World Trade Center, they heard the airliner overhead. Staff members reported they heard and felt the explosion resulting from the airliner's impact. The staff immediately reacted by calming hysteria, taking safety precautions, and preparing medical treatment supplies (i.e., setting up intravenous lines, preparing irrigation fluids, and assembling bandages). Director Debra Lutjen, Registered Nurse, placed calls to assemble off-duty staff, then awaited the imminent arrival of injured victims.

Findings

Hospitals and clinics executed response activities according to preestablished disaster plans.

For the first few hours, there was little information relayed from the scene to the hospitals about patient flow. Some hospital representatives expressed their general impression that patients were being transported from the scene in a disorganized or unplanned manner.

Traffic congestion and bridge closings hampered the return of off-duty staff and those on business at remote locations.

Coordination between DTHC staff and EMS Control was inadequate. DTHC staff was in critical need of patient transport units near the POAC, on the north side of the Pentagon. Because of the lack of communication with EMS responders, only 2 private ambulances were available to transport approximately 40 seriously injured patients from that side of the Pentagon. As a result, clinic staff recruited volunteers and transported victims in privately owned vehicles. The urgency of the situation overshadowed liability issues.

Recommendations and Lessons Learned

During potential mass casualty events, all involved definitive care facilities must make a concerted effort to communicate with one another. Regional disaster plans and procedures must be reviewed and exercised. They should include communications protocols to ensure all parties can exchange information. (HC-001)

Communications must be established between EMS Control and definitive medical treatment facilities to provide timely and accurate information regarding the medical condition and disposition of patients. (HC-002)

Future planning efforts must include the integration of clinics into disaster response operations, even if only to share information. (HC-003)

Consideration must be given to unexpected traffic bottlenecks and impediments arising from regional evacuations, security closings, and their potential for disrupting emergency medical response. (HC-004)

SECTION 2: COMMUNICATIONS

Observations

On September 11, the hospital community experienced mixed results regarding communications requirements and capabilities. The Arlington County ECC was inundated with radio traffic and 9-1-1 calls within moments of the Pentagon attack. Attempts to alert area hospitals of the impending influx of patients were hampered by the volume of emergency traffic. ECC Communications Technicians used personal cellular telephones in some cases, dialing repeatedly until they were able to get through. In the District of Columbia, Washington Hospital Center kept up-to-date by monitoring dispatch messages transmitted on Arlington County ECC radio communications. George Washington University Hospital experienced difficulty in contacting the District of Columbia Hospital Association's Hospital Mutual Aid System by radio.

Although communications between the hospitals and Incident Command regarding the types of injuries and estimated casualty counts were inadequate, communications between hospitals and incoming EMS units were clear and accurate regarding specific patients and their injuries.

The DTHC at the Pentagon is required by its emergency response plan to establish communications with the Arlington County ECC. However, this coordination did not occur. The Rader Clinic identified a need for an emergency communications capability between the clinic, response teams, and ambulances.

Arlington Urgent Care does not have an emergency radio communications capability and relies exclusively on landlines and cellular telephones. Communication with EMS units and hospitals is severely limited.

Findings

Current regional medical disaster plans do not designate a Clearinghouse Hospital to coordinate communications on behalf of the medical community during a mass casualty incident. That was previously the role assigned to Inova Fairfax Hospital. Representatives stated they were familiar with previous plans and procedures to establish a coordinated communications center. Current plans no longer call for establishing a coordinated communications center. This thwarted the flow of reliable information regarding the types of injuries and estimated casualty counts.

Media reports regarding the overall situation and specific events at the Pentagon were a prime source of information for hospitals and clinic staffs. In some respects, this information compensated for the lack of information flowing to them directly from the scene. After the initial deluge of patients, hospitals anticipated a continuous stream of victims arriving within the following hours. The lack of medical patient information from authorities at the incident site frustrated efforts to plan ahead.

Internal communications within each hospital and clinic were generally adequate.

EMS transportation units communicated patient information to destination hospitals while en route. These communications were effective.

Recommendations and Lessons Learned

Appropriate changes should be made to plans, including defining standards for measurement, to ensure performance will be improved for the next potential mass casualty event. Plans should be reviewed and exercised annually. (HC-005)

A regional-level review should be conducted to systematically improve readiness for mass casualty events. (HC-006)

A true regional communications system, encompassing all Washington Metropolitan Area hospitals, is essential for adequate response to mass casualty medical emergencies and should be established. (HC-007)

Procedures must be put in place so EMS officials at the incident site provide hospitals complete, timely, accurate, and coordinated patient treatment and disposition information. (HC-008)

Radio communications must be quickly established between EMS Control and medical facilities located onsite at critical and unique facilities in the jurisdiction that are also scenes of mass casualty emergencies. (HC-009)

Exercises should be conducted to reaffirm and practice communications plans, systems, and responsibilities. These exercises should include radio communications and coordination, testing pager systems, and telephonic staff recall. (HC-010)

A regional medical disaster plan should include the designation of a Clearinghouse Hospital to coordinate communication between the incident site and supporting medical treatment centers. (HC-011)

SECTION 3: DISASTER OPERATIONS

Observations

Regional hospitals reported that their internal Incident Command System (ICS) worked well. Implementation of hospital Emergency ICS and disaster plans at each hospital provided responsive and effective command, control, and coordination. However, external coordination with on-scene EMS Control was not well-executed.

Most area hospitals and clinics have plans for handling a variety of emergencies, including mass casualty events; however, some do not have such plans. For example, the Arlington Urgent Care disaster plan focuses on an internal disaster, such as a fire in a treatment room. Consequently, a modification to its disaster plan is in order.

Military medical volunteers onscene at the Pentagon were unfamiliar with the ICS and, initially, tended to operate unilaterally. Staff from the military medical clinics, DTHC, and Rader Clinic, adapted more readily to the ICS support role and accepted guidance and direction from ACFD EMS Officers.

Area hospitals had adequate numbers of medical professionals to meet the mass casualty requirements resulting from the Pentagon attack. Hospitals canceled routine services, rescheduled elective surgical procedures, expedited discharges and transfers, and freed medical staff to respond to the anticipated requirements. The number of casualties received at the hospitals did not exceed hospital staff capability. However, road closures and traffic congestion delayed the arrival of recalled off-duty medical staff members.

The DTHC and Rader Clinic are not staffed at levels to support mass casualty management. These clinics used qualified volunteers to augment their military medical staff and assist on September 11, and plan to do so for other extreme situations.

Arlington Urgent Care initiated a staff recall as they responded to the medical needs of the first 10 walk-in patients suffering from injuries incurred at the Pentagon. Staff members experienced delays in reporting due to road closures.

Medical supplies and other resources were, for the most part, adequate to respond to requirements generated by the Pentagon attack. However, Washington Hospital Center needed additional medical replacement skin to treat burn patients.

Virginia Hospital Center - Arlington provided medical supplies for EMS operations at the Pentagon, replenishing items on transport and treatment vehicles.

Arlington Urgent Care acquired additional supplies of Sylvadine®, a burn medication, by making an emergency purchase at a nearby Costco pharmacy.

Hospitals indicated more planning and coordination is necessary regarding the request, receipt, and distribution of Federal resources, including the various task forces available to the area.

The number of victims first anticipated did not materialize. The number of casualties did not place an overwhelming strain on existing hospital resources.

At Virginia Hospital Center - Arlington, maintaining effective physical security was problematic. The ER entrance also serves as one of the main entrances to the hospital. Increased patient traffic caused by the Pentagon attack created an added burden for the security staff. Additionally, a suspicious package was found near the entrance that required law enforcement intervention, further slowing operations. By noon on September 11, Virginia Hospital Center - Arlington had instituted a badge system to help with access control.

Other hospitals suggested that day-to-day hospital security forces do not have the resources to adequately respond to their disaster plan security requirements. Hospitals should be identified as a critical resource and receive additional security support from public safety agencies.

The DTHC and Rader Clinic did not experience internal security problems. The DTHC indicated site security at the Pentagon was lax during the first 12 hours.

Findings

Washington Metropolitan Area hospitals found that their respective internal ICS and disaster plans provided the command, control, and coordination mechanisms required to operate in a responsive and effective manner on September 11.

ICSs worked well internally for area hospitals, but were not coordinated with the on-scene Incident Command. Current area plans do not call for establishing a command hospital or a regional medical communications coordination center. This resulted in serious gaps in the flow of information. Such provisions would have assisted greatly in matching medical resources with evolving requirements.

Because the attack occurred on a weekday morning, hospital staffing levels were adequate, particularly when coupled with the fact that many routine services were canceled to prepare for emergency response activities. Some facilities reported that, by the afternoon of September 11, the volume of community donations and number of volunteers overwhelmed them.

Road closures and traffic congestion frequently delayed the return of off-duty hospital and clinic staff.

The security staff at Virginia Hospital Center - Arlington had difficulty controlling access at the emergency entrance. In a full mass casualty event, security forces at area hospitals do not have the resources to manage patient traffic.

Hospital representatives see a need for coordination in providing urgently needed medical resources, such as the medical replacement skin required by Washington Hospital Center.

Current disaster response plans do not include area clinics as treatment resources.

Recommendations and Lessons Learned

Every area hospital should assess its readiness and performance during the Pentagon attack, identify areas in which there are deficiencies, and formulate and implement a plan for rectifying them. ICS, staffing, logistics, and security should each be subjected to the rigor of this review. (HC-012)

In mass casualty situations, a Clearinghouse Hospital should be designated or some other provision made to coordinate between the on-site EMS Control and area treatment facilities. (HC-013)

All hospitals and clinics should have contingency plans for internal and external events. Clinics should also be included in area disaster response plans. (HC-014)

A central location or a single coordinator should be identified to receive and manage donations and coordinate hospital volunteer help. (HC-015)

Area hospitals should anticipate future mass casualty events and research information required for the request, receipt, and distribution of Federal medical resources. This information should be documented, placed in the Emergency Operations Plan, and systematically updated. Sharing this information will improve the area's overall readiness for the next mass casualty event. (HC-016)

Plans should include the provision of public safety agency support to augment hospital security and, if needed, expedite the transport of medical resources. (HC-017)

Deployment of Federal medical stockpiles needs to be coordinated with local EOCs and area medical providers. (HC-018)

SECTION 4: PATIENT CARE

Observations

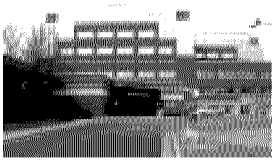
In a mass casualty terrorist incident, a hospital's usually fast-paced ER activities are greatly accelerated, and the number of patients significantly increases. Patients are systematically received, triaged, stabilized through emergency treatment, and processed for surgery or specialized medical procedures, all within minutes. A hospital's highly trained and skilled ER staff is augmented to provide additional mass casualty response capacity. The goal is to save lives and reduce the traumatic effects of the mass casualty incident through the timely provision of definitive medical care.

On September 11, each area hospital took immediate actions, received patients, and responded to the health and medical needs of the injured victims of the terrorist attack on the Pentagon.

- Virginia Hospital Center - Arlington received 44 patients transported by EMS units or self-referred. The patients suffered from burns, respiratory problems (smoke inhalation), and orthopedic trauma injuries. Twenty-six patients were treated and released. Eighteen patients were admitted, nine of whom were treated in the ICU. Two ICU burn patients were transferred within 48 hours to Washington Hospital Center.

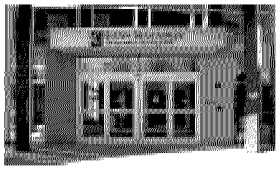
- Inova Alexandria Hospital received 23 patients, most transported by EMS units. The patients suffered from respiratory problems (smoke inhalation), trauma, head injuries, and other minor injuries. Four patients were treated and released. Nineteen patients were admitted for further treatment and observation.

- Inova Fairfax Hospital received one patient, referred by INOVA Emergency Care Center (HealthPlex) in Springfield, VA. This woman suffered only minor injuries, but was pregnant. As a precaution, she was treated and transferred to Inova Fairfax Hospital for observation and subsequently released.



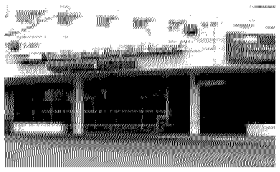
- EMS units transported six patients to Northern Virginia Community Hospital in Arlington County. These patients suffered minor orthopedic injuries, and were treated and released.

- INOVA Emergency Care Center (HealthPlex) received three patients via EMS units. The patients had minor injuries. Two were treated and released. One was referred to Inova Fairfax Hospital.



- George Washington University Hospital received three patients by self-referral. The patients had minor injuries and were treated and released. Traffic congestion and bridge closings across the Potomac River limited access to George Washington University Hospital.

- Washington Hospital Center received 13 patients by air medical evacuation, from EMS units, and 2 by transfer from Virginia Hospital Center - Arlington on September 11 and 12. These patients suffered from severe burns, smoke inhalation, shock, and minor injuries. Five patients were treated and released. Ten patients were admitted, of which nine were placed in the Burn ICU. The hospital had not previously received that many major burn patients at one time.



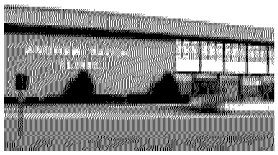
Dr. Jordan, Washington Hospital Center Burn Center Director, aware that surgical requirements for skin replacement would quickly deplete available skin resources, issued an urgent request for additional medical replacement skin. A call to the skin bank at the University of Texas Southwestern Medical Center (TSMC) in Dallas requested shipment of all available medical replacement skin. With commercial aircraft grounded throughout the United States, TSMC packed 70-square feet of skin on dry ice, placed it in travel containers, and staff members drove nonstop in a van, arriving at Washington Hospital Center 23 hours and 12 minutes later. A Cincinnati, OH, skin bank provided 30 more square feet in 12 hours. Another skin bank in Dayton, OH, delivered more skin to Wright-Patterson Air Force Base (AFB), requesting an urgent delivery to Washington Hospital Center. The skin was required to stabilize burn wounds, until surgeons could graft the patients' own skin, taken from other locations that were not burned. The rapid actions taken by these hospitals were extraordinary, reducing the suffering of burn victims and saving lives.

Dr. Jordan and his associate, Dr. James Jeng, were the principal surgeons. Working 12- to 16-hour shifts for 3 weeks, they performed more than 112 surgeries on the 9 victims in the Burn ICU. More than 700 units of blood were required from the Washington Hospital Center Blood Bank. One of the nine died, having suffered smoke inhalation and severe burns on more than 60 percent of her body.

- Arlington Urgent Care received 10 patients. EMS delivered one patient; another patient was self-referred; and eight others arrived in two minibuses. The patients had minor burns, lacerations, and orthopedic injuries. Seven patients were treated and released. Two patients were transferred to Virginia Hospital Center - Arlington via EMS, and one patient to Walter Reed Army Medical Center.

  Dr. Olympia Dallas of Arlington Urgent Care responded immediately to the staff recall. Because of traffic delays and closed streets, it took nearly 2 hours to reach the facility. Arlington Urgent Care treated 20 patients, 10 directly injured in the Pentagon attack. More than 100 other Pentagon occupants visited the facility, just 2 blocks away, to use telephones, calm nerves, and monitor the television coverage of the Pentagon attack.

- The Rader Clinic received five patients by 1:15 p.m. One patient had become short of breath in the adjacent commissary parking lot. The other four had moderate to minor injuries sustained in the Pentagon attack. One, suffering a head injury, was transferred immediately to Virginia Hospital Center - Arlington. The other three patients were treated and released.



- The DTHC operated in an EMS mode, providing emergency medical treatment at the clinic, at triage and treatment sites at the Center Courtyard, and close to the North Parking Lot. Eight patients were treated in the clinic. Fifteen patients in the Center Courtyard were evacuated to Virginia Hospital Center - Arlington. Approximately 40 patients, 20 walking wounded, and 20 moderate-to-severely injured were located at the triage and treatment site by the North Parking Lot.

Overall, 106 patients were received for medical treatment by area hospitals, care centers, and clinics. Fifty-seven patients were treated and released. Forty-nine patients were admitted to hospitals for treatment. The prompt and professional definitive medical treatment saved lives and reduced the traumatic effects of this terrorist act. The fact that only one patient died is a tribute to the hospitals, doctors, nurses, and medical staff engaged in the response to this incident. (See Figure B-3.)

Facility	Victim Disposition		
	Patients Received	Treated/ Released	Admitted
Virginia Hospital Center - Arlington	44	26	18* *2 Transfer to Washington Hospital Center
Inova Alexandria Hospital	23	4	19
Inova Fairfax Hospital		1* *Transfer from HealthPlex	
Northern Virginia Community Hospital	6	6	
INOVA Emergency Care Center (HealthPlex)	3	2* *1 Transfer to Inova Fairfax Hospital	
George Washington University Hospital	3	3	
Washington Hospital Center	13	5	8* *2 Transfer From Virginia Hospital Center - Arlington
Arlington Urgent Care	10	7	3* *2 Transfer to Virginia Hospital Center - Arlington, 1 Transfer to Walter Reed Army Medical Center
Andrew Rader U.S. Army Health Clinic	4	3	1* *Transfer to Virginia Hospital Center - Arlington
Totals	**106**	**57**	**49**

Figure B-3. Victim disposition.

Findings

Area hospitals were fully capable of treating the casualties they received. However, mass casualties numbering in the hundreds would have challenged the capacity of local treatment facilities, particularly regarding availability of medical replacement skin and burn beds.

Hospital representatives are familiar with medical and pharmaceutical supplies and vendors, and are able to obtain supplies on short notice.

Arlington Urgent Care staff treated many victims, but only three patients required subsequent transport to a definitive care facility. The staff indicated

they would have transferred patients earlier if they had known area hospitals were not inundated with victims.

Hospitals made inquiries independent of one another to inventory the region's capacity to treat burn victims.

Recommendations and Lessons Learned

Immediate efforts must be undertaken to evaluate the regional capacity to treat burn victims, including addressing regional shortages of burn beds. This process should identify deficiencies, implement remedies, and streamline procedures to continuously improve the treatment of burn victims. (HC-019)

Area hospitals should be aware of the resources available from military sources. (HC-020)

Plans and policies must be coordinated on a national, regional, and local level to allow the most expeditious transport of necessary resources during emergency conditions. (HC-021)

Regional mass casualty response plans should include area clinics and urgent care centers, which should also be included in exercises. (HC-022)

SECTION 5: PLANNING, TRAINING, AND PREPAREDNESS

Observations

The successful medical response of area hospitals and clinics is based on well-prepared disaster plans and trained medical staff to implement them. This high level of preparedness is achieved through planning, training, and exercises.

Findings

DTHC participation in an Arlington County EMS tabletop exercise with Arlington County EMS in May 2001 helped response preparation for the Pentagon attack. The scenario in that tabletop exercise featured a commuter airplane crashing into the Pentagon. Additionally, Major Brown and other DTHC staff had recently conducted a detailed disaster plan review. The familiarity with its content helped adapt the DTHC disaster plan to this situation.

During response activities, the Rader Clinic staff discovered there had not been prior coordination with Henderson Hall (U.S. Marine Corps Headquarters) to permit emergency vehicular traffic along its road network.

The Rader Clinic did not integrate dental clinic staff into its response organization. Clinic staff members are familiar with medical terminology, sensitive to patient treatment, and can probably be incorporated into emergency operations more easily than volunteers with nonmedical skill sets.

Hospitals and clinics were unable to quickly evaluate the capabilities of volunteers to determine how best to use their skill sets.

Recommendations and Lessons Learned

Hospital and clinic representatives should review and update current disaster response plans to incorporate lessons learned from the Pentagon terrorist attack and institute a process for performing such reviews and updates regularly. (HC-023)

Training in mass casualty operations and in the ICS should be regularly offered to hospital and clinic staff throughout the Washington Metropolitan Area. (HC-024)

Standards should be established to quickly evaluate and classify volunteers wanting to help in emergency situations. (HC-025)

Regional mass casualty response exercises involving all area hospitals and clinics should be held annually. (HC-026)

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ANNEX C

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INTRODUCTION

The terrorist attack on the Pentagon, September 11, 2001, presented a unique convergence of law enforcement responsibilities belonging to different organizations. The Pentagon and its surrounding grounds are bound on all sides by the Arlington County Police Department's (ACPD's) 4th District. Thus, the area surrounding the Pentagon is the responsibility of Arlington County. However, the Pentagon is a Department of Defense (DoD) facility under direct control of the Secretary of Defense. The Defense Protective Service (DPS), a Federal law enforcement agency, has exclusive jurisdiction at the Pentagon. It is not uncommon for neighboring law enforcement jurisdictions to exercise concurrent jurisdiction in certain locations. This is not the case at the Pentagon. ACPD authority stops at the perimeter, where DPS assumes control. Moreover, because this was a terrorist attack, the Pentagon and its surrounding grounds were immediately rendered a Federal crime scene, the exclusive domain of the Federal Bureau of Investigation (FBI) under the terms of Presidential Decision Directive (PDD)-39. Many additional law enforcement agencies participated in the response to the attack on the Pentagon, including the Arlington County Sheriff's Office (ACSO), the Virginia State Police, mutual-aid police departments and sheriff's offices from neighboring jurisdictions, the Treasury Department's Bureau of Alcohol, Tobacco and Firearms (BATF), military police from the Military District of Washington (MDW), the U.S. Capital Police, the U.S. Park Police, the DC Metropolitan Police Department, the U.S. Secret Service (USSS), the EPA Criminal Investigation Division (CID), the U.S. Air Force Office of Special Investigations (OSI), the National Transportation Safety Board (NTSB), and numerous others referred to throughout this report. But they did so in support of the ACPD, the DPS, and the FBI. More than 2,000 law enforcement officers, agents, and supervisors were committed to the Pentagon response. Part I, Arlington County Law Enforcement, describes the activities of the ACPD and the ACSO in response to the September 11 terrorist attack on the Pentagon. Part II of this annex describes the activities of the DPS. Part III addresses FBI operations.

The Arlington County Police Department (ACPD) was founded on February 1, 1940, and has expanded from its original 9 members to a current authorized strength of 362 full-time sworn officers and 85 civilian staff members. It provides law enforcement services to Arlington County's urban residential and business communities in an area of approximately 26 square miles, located across the Potomac River from Washington, DC. The county's residential population of 190,000 increases substantially during the workday with the influx of commuters, tourists, employees of local businesses and Federal Government agencies with offices in Arlington, as well as travelers traversing the county. All roads and rail routes from Virginia directly into the District of Columbia pass through Arlington County. The ACPD, under the leadership of Chief Edward Flynn, provides 24-hour protection using 3 shifts to patrol 10 police beats located within 4 districts that follow the natural boundaries within Arlington County. A captain, who reports to the deputy chief of operations, commands each police district. The ACPD has adopted a community-based, problem-oriented policing strategy, commonly known as

"community policing." Community policing engages 211 officers and supervisors assigned to the 4 districts. (See Figure C-1.) These officers are responsible for that area 24 hours a day, 7 days a week. They are part of the community they serve. The ACPD has the longest standing accreditation in the world from the Commission on Accreditation for Law Enforcement Agencies, Inc. (CALEA).

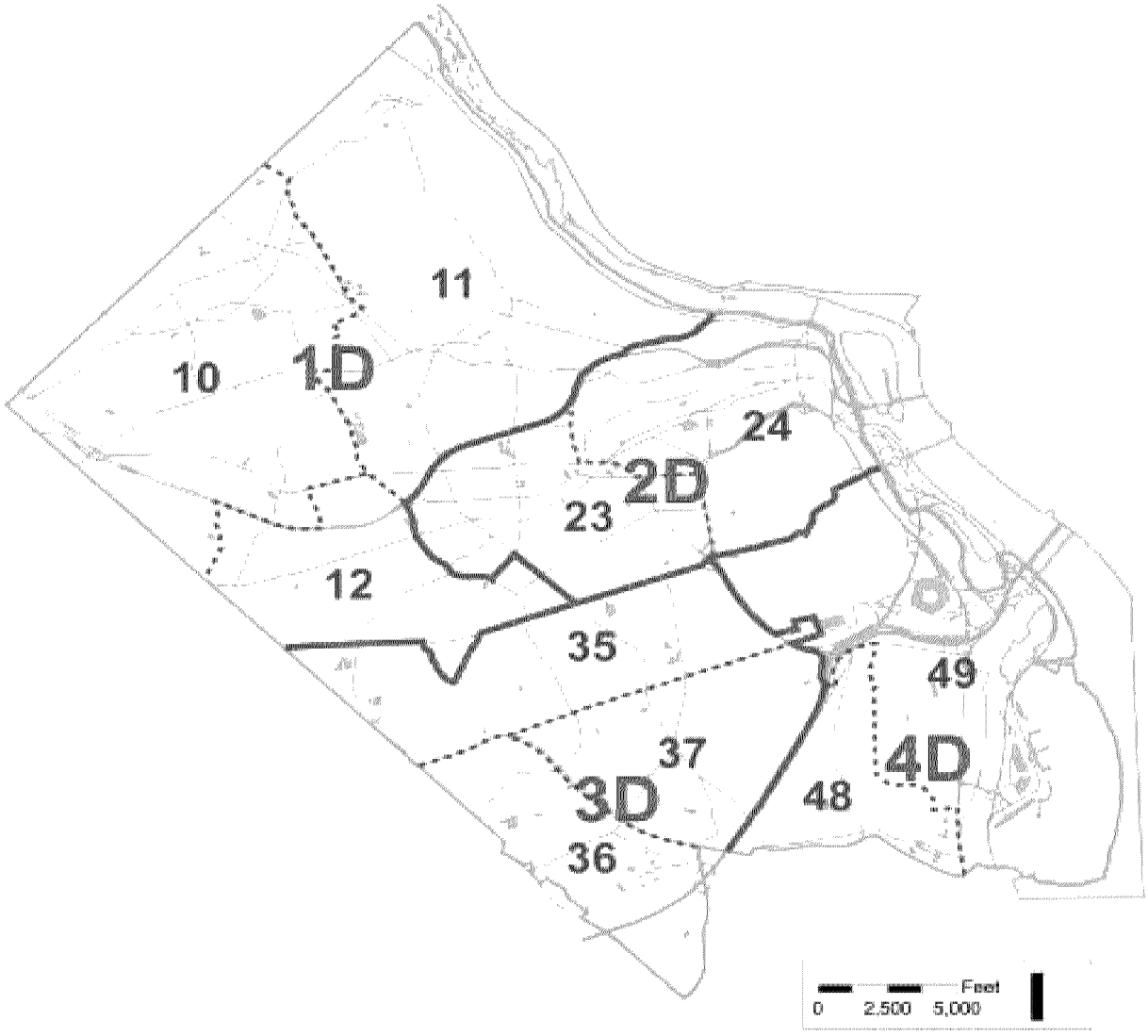


Figure C-1. ACPD districts and precincts.

The Arlington County Sheriff's Office (ACSO) is the oldest county law enforcement agency, dating back to the colonial period. The ACSO is a nationally accredited agency with 270 sworn deputies and civilian staff led by elected Sheriff Beth Arthur. Its principal functions are to support the county judiciary system and manage the correctional facility, which has an average daily population of 500 inmates.

The Defense Protective Service (DPS) is the law enforcement agency responsible for the Pentagon and 24 additional off-site DoD locations in the Washington Metropolitan Area. It provides a full range of law enforcement and security services. DPS Headquarters is located inside the Pentagon, which is served by 303 personnel and supervisors under the leadership of Chief John Jester. All 251 armed officers of the Law Enforcement Division are graduates of the Federal Law Enforcement Training Center at Glynco, GA. The Law Enforcement Division Operational Services Branch provides around-the-clock police services and includes a Special Operation Detachment consisting of the Emergency Services Team, the Protective Services Unit, and a K-9 Unit with explosive detection capabilities. The Law Enforcement Division also manages more than 400 contract guards that staff their off-site facilities. The 51-person Security Services Division is the nonsworn (unarmed) part of the DPS. Securing the Nation's military headquarters and the classified material stored there is a unique responsibility of the DPS.

The Federal Bureau of Investigation (FBI) is the principal investigative arm of the U.S. Department of Justice (DOJ). The FBI has investigative jurisdiction over violations of more than 200 categories of Federal crimes, including threats involving weapons of mass destruction (WMD), sabotage, and hostage taking. Its 11,000 special agents and 16,000 professional support staff are assigned to 56 field offices, 4 specialized field installations, 400 smaller offices throughout the country, and 40 legal attaché posts overseas. Although its geographic area of responsibility is the smallest of all the FBI field offices, the Washington Field Office (WFO) is the FBI's second largest in terms of staffing, comprising 657 agents and 650 professional support staff. Because of the special requirements of the Nation's capital and the size of the WFO, it is lead by FBI Assistant Director in Charge (ADIC) Van A. Harp. Three Special Agents-in-Charge (SACs) direct the WFO's Administrative and Technical, Criminal Investigations, and National Security Sections. The WFO organization includes the FBI's Joint Terrorism Task Force (JTTF) and the National Capital Response Squad (NCRS). Two FBI Rapid Deployment Teams are also located in the Washington Metropolitan Area with equipment and supplies stored for immediate response to missions overseas.

The information contained in this annex was accumulated through a series of debriefings and interviews with law enforcement personnel, use of a widely distributed survey instrument, and by reviewing plans, standard operating procedures (SOPs), and a variety of operational documents.

This annex includes three parts that describe activities performed in response to the September 11 terrorist attack on the Pentagon by the principal law enforcement

agencies, the ACPD, the DPS, and the FBI. The sections within each part address the following functional areas: (1) Initial Response; (2) Command, Communications, and the Incident Command System (ICS); and (3) Operations. Each section begins with observations about the events that occurred within the specific functional area. These observations are followed by a set of findings, which reflect the information gathered from the law enforcement officials after the response ended. The sections conclude with 74 recommendations and lessons learned derived from the findings.

PART I

ARLINGTON COUNTY LAW ENFORCEMENT

SECTION 1: INITIAL RESPONSE

Observations

On September 11, 2001, at approximately 9:37 a.m., ACPD Corporal Barry Foust and Officer Richard Cox, on patrol in south Arlington County, saw a large American Airlines aircraft in steep descent on a collision course with the Pentagon. They immediately radioed the Arlington County Emergency Communications Center (ECC). ACPD Headquarters issued a simultaneous page to all members of the ACPD with instructions to report for duty. Two-way pagers are standard issue only for the Emergency Response Team, hostage negotiators, members of the Special Weapons and Tactics (SWAT) team, and several command officials. One-way pagers are issued to most of the remaining sworn officers. Media reports of the attack alerted those who did not receive the pager message. The law enforcement response to the incident was immediate, with the on-duty shift engaged in minutes and most ACPD officers arriving on the scene within the first 3 hours. Several ACPD senior officers were out of the county when the incident occurred. Chief Flynn was attending a conference in Atlantic City, NJ, where he was the featured speaker on the subject of racial profiling. Deputy Chief Holl was at a Virginia Police Corps meeting in Richmond, VA. Both Chief Flynn and Deputy Chief Holl immediately began driving back to Arlington. Deputy Chief John Haas was in Miami, FL, participating in a police chief's assessment program and unable to arrange immediate transportation back to Arlington. This delay turned out to be fortuitous. When Deputy Chief Haas reported for duty on Monday, September 17, he brought fresh leadership to a command section that had been continuously engaged for nearly a week.

The Pentagon on fire.

Lieutenant Robert Medarios was the first ACPD command-level official to arrive on the scene; he assumed command of the ACPD response. Lieutenant Medarios quickly reached an agreement with a DPS official that the ACPD would assume responsibility for the outer perimeter. This was an important decision because the DPS exercises exclusive Federal legislative jurisdiction at the Pentagon and its surrounding grounds. In these instances, the Federal Government acquires all the authority usually reserved by the State.

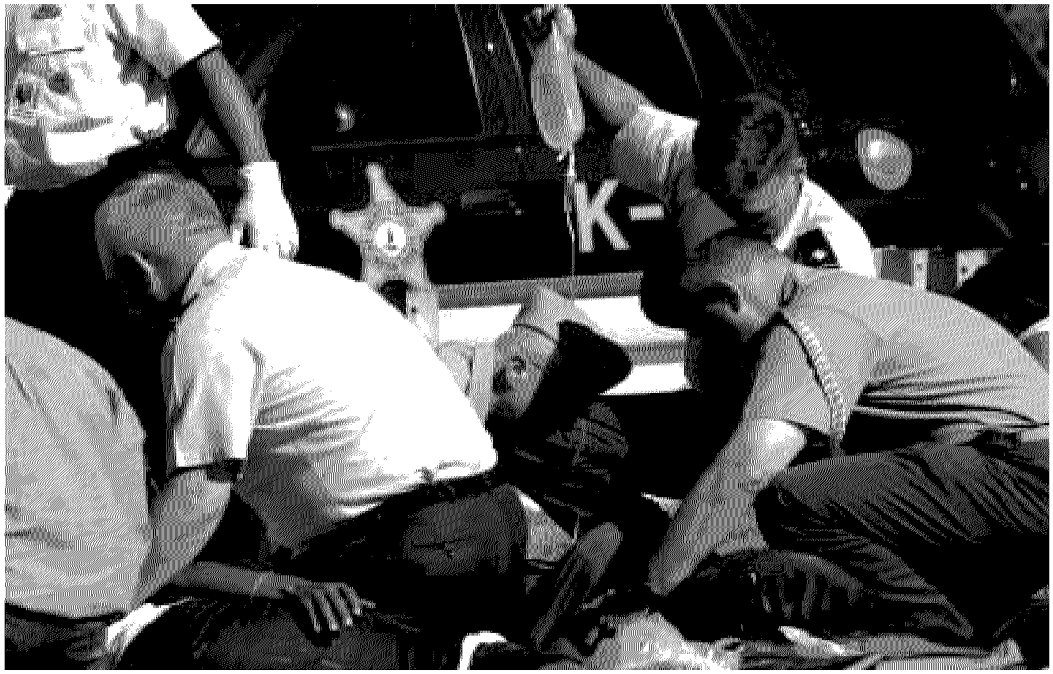
Lieutenant Medairos, Lieutenant Brian Berke, and Sergeant Jim Daly quickly assessed the road network conditions and identified 27 intersections that required immediate police posting. Sergeant Daly began organizing the staging area at Fire Station 5 and the adjacent park. The parking lot and adjacent field were cordoned off and guards posted around the perimeter. By 11:00 a.m., more than 100 law enforcement personnel had reported to the staging area representing the ACPD, ACSO, Fairfax County Police Department, Alexandria Police Department, Arlington County Park Rangers, and the Immigration and Naturalization Service (INS). Officers were assigned to a particular post for 2 or 3 hours, given an hour of relief, then assigned to a different post to minimize boredom.

Many ACPD officers attempting to reach the Pentagon, including detectives who were responding from headquarters, found themselves fully engaged in rerouting traffic and clearing a path for fire, rescue, and medical units. Although they had difficulty reaching their intended destination, these officers knew precisely what needed to be done and acted on their own initiative, radioing to ACPD Headquarters their respective locations and activities. Detectives from the ACPD Vice Control Section assumed general patrol of the county away from the incident site to augment remaining officers in the event of a major criminal incident.

At ACPD Headquarters, Captain Rich Alt, Captain Mary Gavin, Lieutenant Karen Hechenroder and Administrative Assistant Barbara Scott began organizing the department-wide response. The roll call room is a natural meeting place in the police department for gathering and distributing information. It became the home of the ACPD ICS staffing command for the duration of operations. Officers were being deployed throughout the county and information had to be gathered regarding their locations and times of arrival so replacements could be scheduled and relief coordinated.

The ACSO also immediately responded to the attack. Sheriff Beth Arthur and Chief Deputy Sheriff Mike Raffo were watching the World Trade Center attacks on television when they were notified that an airliner crashed into the Pentagon. They immediately headed to the Arlington County Emergency Operations Center (EOC). ACSO recall procedures were implemented and an Incident Command Post (ICP) was set up on the first floor of the courthouse building. The ICP was subsequently relocated to a large conference room in the Arlington County Detention Facility.

Some deputies not already on assignment rushed to the Pentagon, arriving in time to help rescue a few of the victims. Other deputies began directing traffic, as roadways became jammed.



ACSO and Pentagon military personnel assist injured victims.

One of the first actions taken by the ACSO was closing the courts and evacuating the judges and staff. This action was in consultation with the Arlington County judges who approved the closure. This decision freed up approximately 20 deputies who were then able to assist with the response to the attack on the Pentagon.

Findings

ACPD pager notification was not completely successful. Many police officers received several pages; others did not receive a single page. Some reported receiving the page up to 6 hours after it was sent, others could not understand the page they received.

Although traffic congestion during the first hour of the incident posed problems for officers arriving in private vehicles, the response by department personnel was generally quick and effective.

The Virginia State Police performed in extraordinary fashion. From the onset of the incident, the Virginia State Police took complete responsibility for all the exit ramps from Interstate Highway 395, manning 10 critical traffic posts. They also attended every ACPD command briefing.

Before ACPD personnel were able to arrive at the incident scene and report for duty, many officers immediately provided traffic and crowd control in Crystal City and at congested street intersections leading away from the Pentagon. The training, policies, and procedures of the ACPD enable routine delegation of authority to the lowest levels. Police force empowerment is regularly practiced by the ACPD. There is no single agency decision point restricting the actions of officers responding to an emergency. ACPD officers responded as they determined the need, then radioed headquarters their location and the functions they were performing. This helped restore order and expeditiously reduce congestion, but it added to the ACPD staffing management challenge. It was not always clear where officers were located during the tumultuous early hours.

There was no plan or memorandum of agreement (MOA) in place between the Pentagon and Arlington County for evacuation procedures or securing the perimeter of the Pentagon. Experience gained while working together during large-scale events, such as the Marine Corps Marathon, helped facilitate coordination and communications between the two organizations.

View of the Pentagon, from the south side of the Navy Annex, as workers evacuate.

Cellular telephones are standard issue for ACPD personnel in the rank of captain and above. However, the cellular telephone systems were overloaded and ineffective during the first few hours of response. In the area surrounding the incident, Nextel's Direct Connect feature worked well for those personnel so equipped.

There are no parking spaces designated for personal vehicles of ACPD police officers near ACPD Headquarters. This delayed reporting for duty. The shortage

of available parking spaces impacts all county agencies during a staff recall. A portion of 14th Street was cleared of parked cars and made one way to improve access for mutual-aid units.

Arlington County Court House, where both the ACPD and ACSO are headquartered.

The parking lot near the county government complex on Adams Street used for official vehicles was not secured or regularly patrolled.

ACPD policy requires that plainclothes officers have access to police uniforms, which are important in situations requiring quick recognition of law enforcement authority. Some plainclothes officers reporting to the headquarters did not have uniforms and wore their badges on their outer garments for recognition.

During the initial hours of the response, there was no systematic method for recording when ACPD officers reported for duty, the hours they worked, what posts were staffed, and end-of-shift checkout times. Sergeant Jane Morris began accumulating information within the first 30 minutes, but the situation was fluid and dynamic. On September 12, Sergeant Morris, assisted by Ms. Tamekah Johnson and Ms. Rosemary Sejas, reconstructed time and attendance records from the previous day.

In retrospect, the initial response by ACPD and mutual-aid personnel produced a surplus of officers for the immediate law enforcement requirements. This was not readily apparent at the time, as it was impossible to grasp the scope of the evolving response effort. If the requirements had been known, some officers could have been sent home with instructions to rest and report back for a later shift.

Recall procedures had limited success. The ACSO instituted a "phone tree" notification system of call back to recall personnel. Many deputies reported to work on their own initiative upon learning about the incident on television or radio. Everyone that could report for duty did so. Many encountered, and were slowed by, traffic gridlock.

The ACSO was the only Arlington County public safety organization to issue a public service announcement to local radio and television stations requesting that all ACSO personnel report to work. Prescripted force mobilization messages for other Arlington County public service agencies were not available or issued.

The ACSO immediately assumed a heightened emergency status. The ICP was established on the first floor of the headquarters building. Sheriff Arthur ordered an immediate lockdown of the county detention facility. Perimeter security around the courthouse and detention facility was implemented.

ACSO road units responded immediately in various ways, such as assisting in victim rescue, closing streets, and securing county buildings.

Like other responding agencies, ACSO officials quickly discovered that cellular and landline telephones were ineffective early in the response. ACSO handheld radios are outdated and incapable of monitoring the channels or talk groups of other county departments.

Recommendations and Lessons Learned

The ACPD should thoroughly test the current pager system not only to determine the extent of operator error and technical deficiencies experienced during the September 11 simultaneous notification, but also to recommend and implement corrective actions. (LE-001)

Public service announcements recalling police officers and other critical personnel should be prepared in advance, coordinated with the Arlington County Assistant Manager of Public Affairs, Richard Bridges, and pre-positioned with area media outlets. (LE-002)

The ACPD should develop an MOA with the DPS and MDW for emergency law enforcement support at the Pentagon and possibly at other military facilities in Arlington County. The experience gained during the Pentagon response can serve as a guide for such an agreement. (LE-003)

Arlington County needs to press the case for granting public safety officials cellular priority access service (CPAS) during an emergency. The ACPD should also consider the merits of expanding the department's use of the Nextel Direct Connect two-way feature and two-way pagers. (LE-004)

Arlington County should identify a centrally located site that can serve as a satellite parking area. Buses would then be able to shuttle police officers and other county staff to and from headquarters. (LE-005)

ACPD officers assigned to plainclothes duties are required to keep a complete uniform at headquarters for emergencies that require immediate recognition of police authority. This policy should be strictly enforced. (LE-006)

The ACSO should replace its telephone notification "phone tree" with a pager notification system. (LE-007)

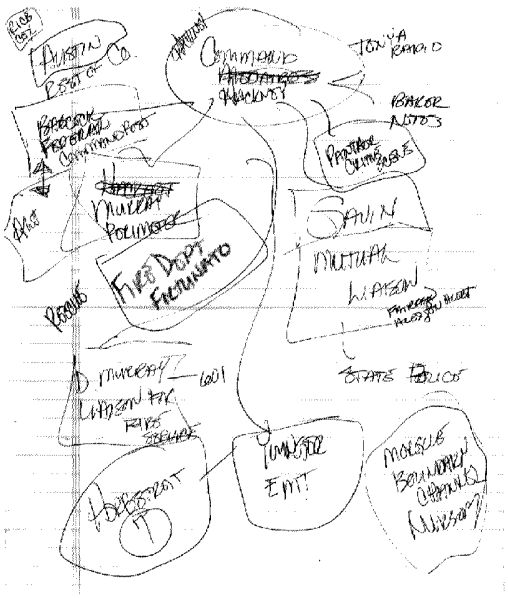
ACSO mobile radios should be replaced with modern devices compatible with those of other county departments and regional public safety organizations. (LE-008)

SECTION 2: COMMAND, COMMUNICATIONS, AND THE INCIDENT COMMAND SYSTEM

Observations

The ACPD previously adopted the ICS as the appropriate response structure for large-scale incidents. Moreover, less than 2 weeks prior to the terrorist attack on the Pentagon, all ACPD command officers participated in routine recurring ICS training. This is important for two reasons. First, law enforcement situations are typically fluid and dynamic, thus the implementation of ICS must be flexible and adaptable. Second, most of the ACPD senior leadership was away from Arlington County on the morning of September 11. As Chief Flynn raced south from the conference in New Jersey, he knew that, in his absence and the absence of Deputy Chiefs Holl and Haas, the officers of the department were trained and prepared to rise to the occasion. His confidence proved justified.

Shortly after Lieutenant Medarios assumed initial command at the incident site on September 11, Captain Rebecca Hackney arrived and took over as Incident Commander. Captain Hackney sketched the initial ACPD ICS assignments on a notepad. Acting Chief James Younger arrived, reviewed Captain Hackney's ICS assignments, then directed Captain Daniel Murray to be ACPD liaison to the ACFD ICP and Captain David Herbstreit to liaison with the FBI. By telephone, he spoke with Deputy Chief Holl, who was returning from Richmond, and requested that he respond directly to the incident site. Deputy Chief Holl arrived at about noon and took over as the ACPD Incident Commander. Deputy Chief Younger reported to the Arlington County EOC, as requested by the County Manager.



ACPD Captain Hackney's first sketch of ICS assignments.

The ACPD loaned its mobile command post to the Arlington County Fire Department (ACFD) to serve as the initial ICP. The ACFD does not have a similar capability. Deputy Chief Holl worked out of the Watch Commander's Ford Expedition. The ACPD formulated a plan to screen pedestrian and vehicular traffic and assign ACPD representatives to the ACFD ICP, the FBI Command Post, EMS Control, the Arlington County EOC, and the ECC. Captain Murray reported to the ACFD ICP and told Chief Edward Plaugher he would remain with the ACFD throughout the fire and rescue operations.

Recognizing that minute-to-minute activities would be all consuming, early in the afternoon of September 11, Deputy Chief Holl assigned Lieutenant Steve

Broadhurst to forecast the issues that would confront the department during the next 6 to 12 hours. Captain Roy Austin was assigned responsibility for department routine operations away from the incident site.

At about 10:15 a.m., ACFD Chief James Schwartz ordered a site-clearing evacuation because of the report of a second hijacked aircraft heading toward the Washington Metropolitan Area. The ACPD ICP moved to an area beneath the I-395 overpass at Hayes Street and set up near the ACFD ICP to facilitate communications and coordination.

Deputy Chief Holl modified the initial ACPD operations plan, adding countersniper overwatch, SWAT support for the ICP and DPS, FBI evidence recovery support, and ACPD employee health and safety. He also established ICS functional activities, some of which were unique to this incident, such as morgue, hotel security, and credentials. (See Figure C-2.)

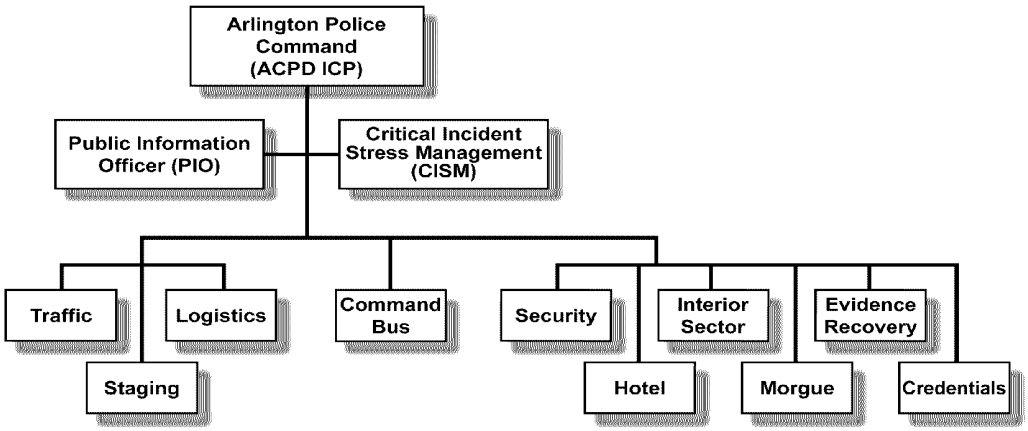


Figure C-2. ACPD ICS Organization Chart.

The nature of the Pentagon response operations demonstrated the importance of flexibility in the ACPD ICS implementation. The ACPD had to manage the on-site incident response and, at the same time, direct routine police patrols throughout the county. ACPD officers volunteered for assignments at the Pentagon, as long as the dates and times did not conflict with their other duties. A volunteer sign-up board was maintained at the roll call room. These assignments were for 12-hour shifts supporting the FBI evidence recovery effort; providing security for sensitive functions, such as the FBI's temporary morgue; working at the ACPD ICP; staffing the incident site access points; providing on-site vendor escort; and similar assignments. ACPD volunteers and mutual-aid officers reported to the staging area at Fire Station 5 for details about their assignment and orientation before deploying to the Pentagon. Staging was a 24-hour operation with five ACPD supervisors rotating 12-hour shifts. Routine county police patrols were managed from ACPD Headquarters. Officers reported to roll call before and after their 10-hour patrol shift. At roll call, officers were briefed and given any special

instructions, particularly related to the threat of potential followup terrorist actions. All of this activity was directed by the ICS staffing command, with two commanders, one administrative assistant, and two student aides assigned to this function.

The ACSO ICP was up and running within 30 minutes of the Pentagon attack. Three section supervisors assumed responsibility for managing the ICP, organizing staffing and resources, and establishing security in and around the courthouse and detention facility. An immediate lockdown of the detention facility was ordered and perimeter security established around the courthouse and detention facility.

Findings

On September 11, many ACPD officers acted on their own initiative clearing congested traffic, opening routes for emergency vehicles, and restoring a semblance of order to a scene that, in some cases, bordered on chaos.

The ACPD Mobile Command Post, on loan to the ACFD to serve as the initial ICP, is too small and lacks the modern technology for an incident as large and complex as that at the Pentagon.

Given the proximity of the ACPD Command Post, the ACFD Incident Commander did not activate an ICS Law Enforcement Branch within the Operations Section. Given the complex jurisdictional arrangements, it would probably have been helpful to have such a branch led by a DPS command officer assisted by an ACPD command officer.

Command post briefing by Deputy Chief Holl.

The Watch Commander's vehicle served marginally as the interim ACPD ICP, but it is too small and is not equipped for extended operations in this role. Had the weather been inclement, command operations would have functioned without mobile shelter. The mobile command post was returned to the ACPD on the third day of the response, after a better-equipped Fairfax County Police Department mobile command unit was made available to the ACFD.

Captain Hackney's quick action in developing a plan for initial ICS assignments ensured a well-organized police response from the early minutes of the incident. When Deputy Chief Holl arrived and took over command, the ACPD was fully deployed and functioning in its planned ICS structure. The ICS added organization and clarified responsibilities.

Because of the several ACPD sector leaders and ICS functional activity supervisors, some officers reportedly received guidance from more than one source, which they sometimes viewed as confusing and even contradictory.

On Day 4 of the response operations, Chief Flynn and Deputy Chief Holl recognized the need to establish an unplanned ICS function, which they designated as "Diplomacy." This activity can best be described as a combination of community relations, protocol, and interagency courtesy. Visiting chiefs of mutual-aid departments and other law enforcement organizations were met, briefed on response operations, and escorted throughout the site. After the incident stabilized, guided bus tours were organized for county employees supporting the first responders so they could appreciate the full magnitude of the incident. When crowds of spectators, some of whom were family members of missing victims, began to gather on a site overlooking the Pentagon, the ACPD provided security and ensured their comfort. Diplomacy became a very important ICS function.

Some law enforcement officers from nonmutual-aid jurisdictions arrived at the incident site offering assistance. Arlington County had not requested their help and their presence could have created personal accountability as well as jurisdictional and legal problems.

Initially, ACPD command meetings were conducted every 2 hours. As time passed and police operations became more routine, these meetings occurred less frequently, eventually occurring at ACPD Headquarters at 5:00 p.m. each evening.

The ACPD does not have an MOA or similar understanding with the MDW or DPS regarding the provision of emergency law enforcement at the Pentagon. The division of responsibility on September 11 was based solely on the initial verbal agreement between ACPD Lieutenant Medarios and a DPS official.

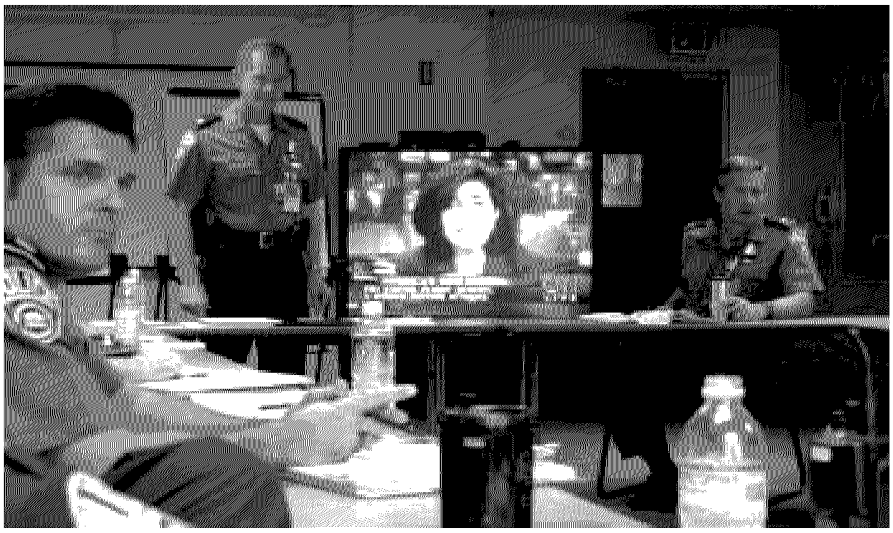
ACPD officers volunteering to work at the incident site reported to the staging area at Fire Station 5, where they received assignments and special instructions. Officers scheduled for routine patrol throughout the county attended roll call at ACPD Headquarters at the beginning and end of each 10-hour shift. At roll call, officers received all the information needed to perform assigned duties. Many of

these officers reported they would have liked to have been given additional information about ongoing response activities. This was addressed later in the week by issuing department-wide voicemail messages.

The ACPD communications network established for this incident used 5 of the 14 available radio channels. Each sector (i.e., Evidence Recovery, Perimeter Security, Motors, and Special Weapons and Tactics) had a dedicated channel. The sectors shared a common command channel. Once radio discipline was restored and the initial volume of traffic subsided, the ACPD radio system worked well.

All ACPD officers are issued a portable radio. Spare ACPD radios were provided to officers from responding mutual-aid jurisdictions. "RIBS," Radio-in-a-Box System, was deployed to the ACPD ICP. This mobile radio has a power supply that plugs into an electric outlet and is used as a portable base station.

The Arlington County ECC had available a new radio interoperability system designated "AGILE" (Advanced Generation of Interoperability for Law Enforcement). This new system evolved from a test program conducted in Alexandria beginning in 1998. AGILE permits law enforcement agencies using different radio frequencies to communicate with each other. It was not deployed during the Pentagon response because there had not been sufficient operator training.



Incident status briefing at ACPD Headquarters. (Chief Flynn on the right.)

Sustaining continuous communications was a challenge. Over time, radios failed because the battery life is relatively short. The ACPD bus driver who transported

mutual-aid officers to their posts was given the additional assignment of replenishing radios and batteries.

Some deploying mutual-aid police brought their own portable radios, which could be reprogrammed by the operator to the appropriate ACPD channel. However, some jurisdictions, including Fairfax County, require a trained technician to reprogram radio channels. During the first 3 days of operations, there were numerous instances when mutual-aid officers on post did not have radio communications with either the ACPD or the ACFD.

Cellular telephone connections were impossible in the first few hours. Additional temporary cellular sites were activated by the evening of September 11 and cellular telephone communications were more effective.

As soon as it became apparent that the response to the attack on the Pentagon would be protracted, the ACSO ICP was relocated to a conference room in the detention facility building. The conference room is large enough to accommodate the ICP and has facilities appropriate for a large-scale incident.

Although the Arlington County Comprehensive Emergency Management Plan (CEMP) does not assign tasks to the ACSO, Sheriff Arthur and Chief Deputy Raffo reported to the Arlington County EOC to see how the ACSO might be most useful during the incident response. An ACSO presence remained at the EOC during operations coordinating numerous support requests and performing many useful services.

Chief Flynn briefs the media.

Recommendations and Lessons Learned

The ACPD should recommend, in incidents not commanded by law enforcement organizations, a Law Enforcement Branch be established within the ICS Operations Section. (LE-009)

The ACPD Mobile Command Post should be modernized with new computing and communications equipment and up-to-date command center software, and enlarged. (LE-010)

Records of events should be maintained, including the names of command post visitors. Standard ICS forms are available for use or to serve as models to create ACPD management aids. (LE-011)

A pocketsize field operations guide including instructions for establishing law enforcement ICS functions should be issued to all command officers and supervisors. (LE-012)

To minimize confusion, lines of authority and the guidance given to ACPD and mutual-aid officers need to be absolutely clear. (LE-013)

Unless specifically requested by the host county, other jurisdictions should not dispatch public safety units to the scene of a WMD attack. Under no circumstances should "freelance" law enforcement officers be allowed access to the incident site or permitted to operate in the local jurisdiction. (LE-014)

Based on the experience of responding to the terrorist attack on the Pentagon, the ACPD should review its current staffing and equipment levels and make adjustments to accommodate WMD events of extended duration and expanded operational requirements. (LE-015)

Other jurisdictions should consider defining an ICS function similar to that designated by the ACPD as "Diplomacy." In a major incident response, how you interact with organizations and individuals is critical to a successful response and to maintaining productive relationships during and after the incident. (LE-016)

Public safety organizations in high-priority locations, such as the Washington Metropolitan Area, must be staffed and equipped for sustained operations. (LE-017)

Using the ACPD bus driver to replenish radios and batteries was a handy expedient, but a fully equipped logistics support vehicle is probably a better alternative. (LE-018)

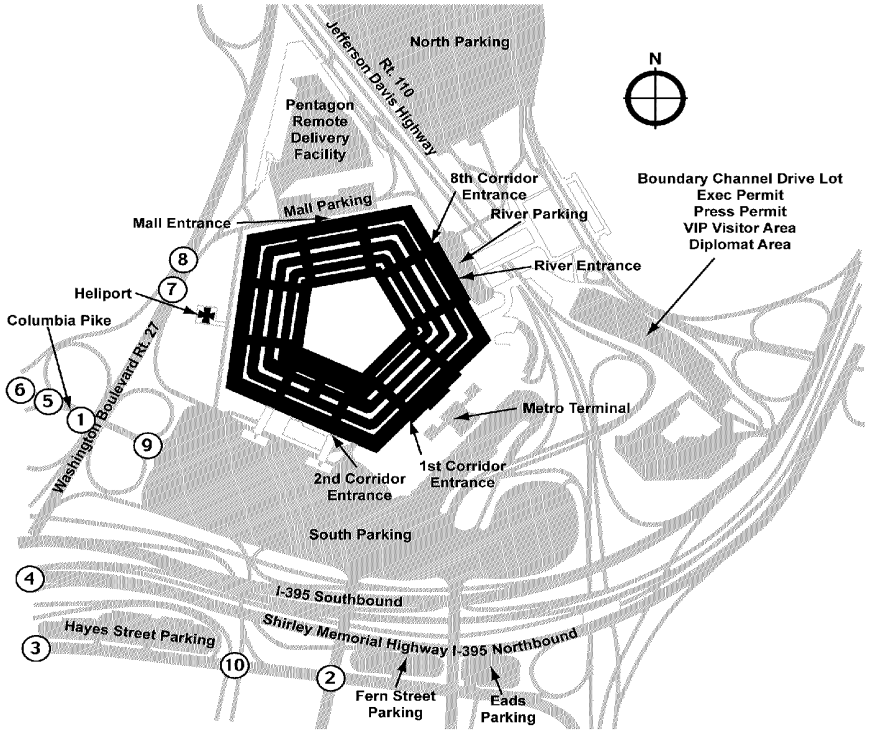
A comprehensive regional assessment of communications interoperability is in order. WMD events do not recognize jurisdictional boundaries. All jurisdictions must be prepared to operate in a mutual-aid environment. (LE-019)

The Arlington County CEMP should be amended to provide for the presence of an ACSO representative consistent with assigned responsibilities. (LE-020)

SECTION 3: OPERATIONS

Observations

The challenge confronting Arlington County law enforcement agencies in the aftermath of the September 11 terrorist attack on the Pentagon was formidable. First of all, routine requirements did not vanish. Arlington neighborhoods still had to be protected and emergency calls had to be answered. Nearly 60 percent of the 362 ACPD uniformed officers and supervisors are regularly committed to the community policing program. For example, during the early hours of the incident, two automobile accident fatalities occurred in the county, requiring notification of next of kin. In addition, the Pentagon response created many additional police requirements. As an example, perimeter security was provided at 10 posts around the Pentagon with 31 officers. (See Figure C-3.)



1 Washington Boulevard (southbound) left ramp to Pentagon (authorized vehicles only)
2 Army-Navy Drive at S. Fern Street (ONLY EMERGENCY VEHICLES into South Parking)
3 Army-Navy Drive at S. Joyce Street (northbound S. Joyce Street CLOSED to all vehicular traffic)
4 Northbound I-395 at Route 27 (Exit 8B) (authorized vehicles only)
5 S. Joyce Street/CITGO Station (MEDIA Control) (keep media away from Landing Zone and Washington Boulevard)
6 Eastbound Columbia Pike at S. Joyce Street (Columbia Pike CLOSED east of S. Joyce Street) (authorized emergency vehicles only)
7 Eastbound Washington Boulevard at crash site (control access to crash site)
8 Westbound Washington Boulevard at crash site/Columbia Pike (keep pedestrians and unauthorized personnel west of Washington Boulevard)
9 South Parking ramp to eastbound Washington Boulevard (ramp from South Parking CLOSED) (authorized emergency vehicles only)
10 Ramp from Army-Navy Drive/S. Hayes Street to I-395 S (roving patrol to keep pedestrians and stopped vehicles off ramps)

Figure C-3. ACPD posts at entry points to the Pentagon.

Sixty officers and supervisors volunteered to support the FBI's evidence recovery efforts. Others provided security at two local hotels, one housing Urban Search and Rescue (US&R) team members and the other housing families of victims. ACPD personnel were assigned to the Arlington County EOC, the JOC, and as representatives at the ACFD ICP. The ACPD Property Office stayed open 24 hours a day. Captain Mary Garvin and Lieutenant Karen Herchenroder managed the ACPD staffing function, another around-the-clock operation.

Approximately 1 week into the incident response, military reservists were called to active duty. The ACPD staffing command identified 14 ACPD personnel with military reserve status and recommended the disposition of each of them based on the needs of the department and relevant military reserve units.

ACPD policies were adapted to meet the circumstances of the occasion. Some were official and formally announced: leave was canceled until October 1; outside training was canceled; all officers were reminded to carry pagers and check voicemail twice daily; mourning bands for badges were authorized until October 1. Other policies were implemented more subtly. The ACPD strove to maintain an appearance of normalcy throughout the county. Thus, mutual-aid officers were used extensively on stationary posts at the Pentagon, freeing ACPD officers to maintain routine patrol duty. ACPD officers, with prior department approval, are authorized to accept private employment while off duty for up to 30 hours each week, with the understanding that they are always subject to recall. Off-duty employment generally consists of providing such uniformed services as security at athletic or cultural events and similar activities. These are high visibility activities to which the public is accustomed. The ACPD decided not to cancel off-duty employment as long as it did not conflict with duty assignments during the response.

Mutual-aid agreements with nearby jurisdictions enabled the ACPD and ACSO to meet all obligations. Arlington County participates in the Northern Virginia Law Enforcement Mutual-Aid Agreement of May 1, 1991. Police departments from Alexandria, Fairfax County, Fairfax City, Falls Church, Loudoun County, Manassas, Prince William County, and George Mason University provided mutual-aid support to the ACPD. Deputy sheriffs from the city of Alexandria and Fairfax, Fauquier, and Prince William Counties reinforced the ACSO under the terms of the Northern Virginia Sheriff's Mutual-Aid Agreement. Greenbelt and Prince Georges County, MD, and Washington, DC, also dispatched police units to Arlington County. Altogether, more than 300 mutual-aid police officers and sheriff deputies were engaged in the law enforcement response, along with 200 military police from the MDW.

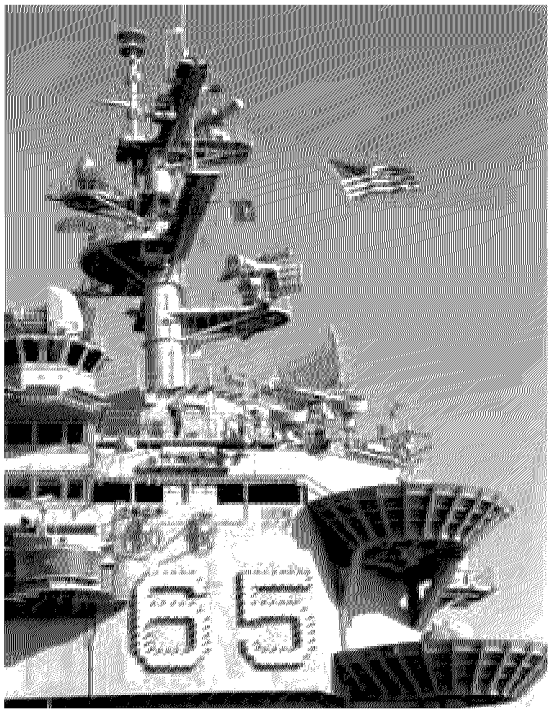
To assist in staging law enforcement personnel, the ACPD arranged with the ACFD to stage personnel at Fire Station 5. It is close to the Pentagon and collocated with a community center with rooms available for officers to rest between assignments. All ACPD and mutual-aid officers volunteering for duty at the Pentagon reported to the staging area to receive instructions before proceeding to the incident site.

During the first few days of the response, there were numerous reports of bomb threats and other suspicious circumstances. On one occasion, three suspicious persons were apprehended in the staging area used by the national and local media support equipment and vehicles. The three subjects were questioned and eventually released. The following morning, the ACPD and mutual-aid SWAT teams were ordered to take positions on the roof of the Navy Annex and on the north and south roof segments at the Pentagon. These positions offered a vantage overlooking the impact site, the principal response area, and the surrounding area. The ACPD and DPS SWAT team members walked patrols together throughout the incident site.

Performing site security.

The enthusiastic support and demonstrations of appreciation by Arlington County residents were heartening. Volunteers came forward with every imaginable form of support, such as food, blankets, refreshments, and offers of help. Banners and placards across the county proclaimed the pride of Arlington citizens in their police officers, sheriff deputies, and firefighters.

Recognizing that many Americans are called upon to make sacrifices when the Nation's security is threatened, the ACPD found a way to express its gratitude to others traveling in harm's way. Early in the response, an ACPD police officer at the incident site had acquired an American flag. Captain Tom Panther, with the help of a cooperative Verizon employee and his "cherry picker," hung the flag from the highway overpass above the ACPD ICP. When the fire and rescue phase of the operation was phasing down, the ACPD decided it would be appropriate if their "battle flag" could continue its service in the war against terrorism. Captain Panther's neighbor is a U.S. Navy officer assigned to the Pentagon. With his help, FedEx delivered the flag to Norfolk, VA, on Friday, September 21. On October 21, it flew from the mast of the



USS Enterprise flying the ACPD ICP Flag.

USS Enterprise as air strikes were launched against al Qaeda forces in Afghanistan. When the USS Enterprise returned to homeport, Captain James Winnefeld, U.S. Navy, visited the ACPD and returned the flag, which now rests in a place of honor in ACPD Headquarters.

Eighty percent of the ACSO deputies are assigned to 12-hour shifts at the detention facility. Most of the others support the county judiciary offices, providing courtroom security, serving subpoenas, and performing similar tasks. The ACSO achieved some initial temporary relief when Arlington County judges accepted its recommendation to order the courts closed on September 12, freeing up 20 deputies. However, requirements to secure county buildings, including the EOC, provide transportation and escort for county officials, deliver meals to responders at remote locations, and assign representatives to the EOC, JOC, and other locations quickly consumed these additional resources.

Findings

There is no current, comprehensive, and coordinated Washington Metropolitan Area regional evacuation plan. In addition, actions taken by one jurisdiction that impact others are not always coordinated. For example, in this incident, closing Federal Departments and agencies on the afternoon of September 11 was not coordinated with the Virginia State Police or Virginia Department of Transportation (VDOT). ACPD Chief Flynn has raised concern that, without proper coordination, one jurisdiction might easily direct evacuating traffic into another jurisdiction's roadblocks.

Control of site access was a monumental challenge. Access control had been a problem following the bombing of the Alfred P. Murrah Federal Building in Oklahoma City and law enforcement authorities instituted a color-coded wristband identification system. Having read about this in an after-action report after the 1996 incident, the ACPD ordered 2,000 wristbands, which were stored in the mobile command unit. On the afternoon of the second day of the Pentagon response, Chief Flynn gave the red, yellow, blue, and green wristbands to the DPS. The complete supply was gone within a period of 2 hours. Beginning on the third day, the DPS made its badging system available to produce identifying credentials, but it was inadequate for a task of this magnitude. Finally, the FBI asked the USSS for help. The USSS trained members of the WMD Army Band to operate its five badge-making workstations and an effective system was implemented.

The fact that the ACPD and ACSO have separate mutual-aid agreements caused some coordination problems. Law enforcement jurisdictional authority outside the Pentagon grounds clearly belonged to the ACPD; however, in some instances, mutual-aid sheriff's units requested by the ACSO reported for duty at the ACPD staging area without prior coordination. Had they been requested to support ACSO operations, there would not have been a problem. However, without prior coordination, the ACPD had to find assignments for these units.

ACPD managed its mutual-aid assets judiciously. Wherever possible, mutual-aid personnel were assigned to stationary posts, including Pentagon access points,

freeing ACPD officers to patrol familiar routes. Chief Flynn chose to delay some offers of assistance from nearby jurisdictions, bringing them in as replacements during the second and third week of operations.

The Staffing Command at ACPD Headquarters was the focal point for mutual-aid support planning and coordination. Offers of support from mutual-aid departments were considered from the perspective of specific staffing requirements: how much help was needed, when, and for how long. Chief Flynn reviewed most of the requests to ensure mutual-aid partners were properly integrated into the operation. Confirmation of the support requested was very specific: "Six officers for 12-hour shifts, from 6:00 a.m. until 6:00 p.m., September 17, 18, and 19." As this process became relatively routine, mutual-aid officers reported directly to staging at Fire Station 5 before beginning their assignments. Some individual officers from other jurisdictions called offering to help without the approval of their department; in other cases, mutual-aid units wanted to bring others with them. These offers were refused. Such ad-hoc practices complicate insurance liability, workman's compensation, overtime payment, and other issues.

Keeping track of the locations of ACPD police vehicles was problematic during the first 24 hours. On occasion, officers scheduled to use a particular vehicle discovered it had been commandeered for a different task. An automatic vehicle locator (AVL) system would have prevented this problem.

As time progressed, the ACPD increasingly used mutual-aid officers on the Pentagon perimeter, releasing its own officers to patrol the county. This made sense in view of the community policing program and familiarity with the Arlington County roadways and neighborhoods.

Shift arrangements were not standardized. The ACPD assumed 12-hour shifts at the incident site for those volunteering to support FBI evidence recovery operations but retained 10-hour shifts throughout the rest of the county. This complicated the staffing function since all overtime hours (the 12-hour shifts) had to be staffed with volunteers. The shift duration for mutual-aid units supporting the ACPD varied depending on their assignment. The ACSO adopted a 12-hour shift for all its personnel.

Time and attendance records after September 11 were meticulously kept. Sergeant Morris personally collected all overtime sheets every day and double-checked all attendance records. It was not until the second week of the response that the ACPD learned that FEMA also required a description of the duties performed by each officer during the recorded time period. Sergeant Morris and the administrative staff had to recreate all of this information.

ACPD leaders took exceptional care to protect the well-being of its officers. They provided extensive critical incident stress management (CISM) and insisted officers take sufficient time off. CISM intervention is designed to reduce the impact of stressful events and accelerate recovery for those directly and indirectly involved. The ACPD senior leaders, however, did not always follow these same prudent policies. Fortunately, several ACPD command officers and

other key personnel, including Deputy Chief Haas, were on vacation or business travel on September 11. Their subsequent return to duty provided a wave of fresh leaders to replace those who had been overcommitted since Day 1. After the incident, ACPD leaders recognized the need for additional training to help supervisors recognize quickly and respond to the signs of fatigue and stress among the staff.

Downsizing and phasing out of mutual-aid and volunteer support requires a significant degree of political sensitivity. It is important that the help of volunteers and other supporting agencies is recognized. A concerted effort was made by ACPD supervisors at the staging area to recognize the important contributions of those volunteering to work at the incident site.

The ACPD did not have sufficient personnel to respond to the many calls from Arlington businesses seeking police security protection. Most of these requests were unrealistic, reflecting the initial concerns of businesses in the first several hours after the Pentagon attack. Auxiliary officers, such as school crossing guards and special event traffic control, as well as police recruits in training, were pressed into service to augment the ACPD wherever practical and prudent.

VDOT closed the northbound lanes of I-395 and the Virginia State Police guarded the I-395 exit ramps. High Occupancy Vehicle (HOV) lanes were reserved for emergency vehicles. The ACPD created six pedestrian and vehicle access points onto the incident site. Specific categories of vehicles were assigned different entrances; for example, emergency vehicles were directed through one gate, while supply vehicles were sent to another.

The DPS was fully engaged in and around the Pentagon and unable to help staff the entry gates onto the site. This placed the burden on the Virginia State Police, ACPD and mutual-aid officers, who did not have jurisdictional authority inside the perimeter to determine whether vehicular and pedestrian traffic should be permitted onto the Pentagon grounds. There was seldom advance notice of delivery vehicles carrying supplies and other critical items. It often took several calls to verify legitimate visitors and give them accurate directions or arrange for escorts. Beginning on September 12, the ACSO assigned three vehicles to the ACFD Logistics Section to escort vendors from the entry point to the incident site delivery location.

Even as the pace became more orderly following the first hectic days, emergency vehicles sometimes operated at unsafe speeds while entering the Pentagon grounds. An ACPD safety officer was assigned to monitor this and other safety factors beginning on September 13. All ACPD supervisors were also reminded of the dangerous conditions. Safety was regularly discussed at ACPD command briefings.

The ACPD provided three 20-person teams that worked a 12-hour shift on alternating days supporting the FBI's evidence recovery sifting operation in the North Parking Lot. This was physically exhausting work that was also psychologically stressful. These officers raked through the debris searching for evidence, body parts of victims, and classified materials.

The ACPD has traditionally been equipped with personal protective equipment (PPE) better suited for crowd control at a political rally than a WMD terrorist event. In preparation for the upcoming International Monetary Fund (IMF) conference, additional chem/bio filters had been issued for all ACPD officers' respirators. The teams supporting the FBI were issued latex over-boots, protective overalls, respirators, safety glasses, head covers, and heavy leather gloves worn over latex gloves.

The stress caused by this evil event extended not just to the first responders, but to their families as well. Although Arlington County's exceptional Employee Assistance Program (EAP) was enormously successful, Sergeant Regina Heising and Emergency Communications Technician Nan Holl suggested and helped plan a special CISM program for ACPD personnel and their families. The Arlington County CISM staff conducted this program at Fire Station 5 on September 23. Babysitting services were provided and counselors spoke with officers and their families. The ACPD extended an invitation to the ACSO and their families to join in the program. The event included a bus tour of the incident site. It was extremely beneficial and well received by the participants. The Reverend Larry Tingle, the ACPD chaplain, participated in the family support program and also visited with officers at the staging area throughout the incident response.

VIP visitors, including President Bush, Defense Secretary Rumsfeld, and several delegations of U.S. Congress members, visited the Pentagon during the first week of the response. In each case, the ACPD and Virginia State Police provided motor escorts within the county and on the Pentagon grounds.

President Bush and Defense Secretary Rumsfeld visit the impact area.

In the absence of a JIC, Arlington County Assistant Manager for Public Affairs Dick Bridges held daily press conferences. Because of the nature of the event, there was continuing media interest in law enforcement activities at the incident scene, over and above the periodic briefings by the Attorney General and the FBI Director. The ACPD helped fill this void by providing regular vignettes about day-to-day police activities at the Pentagon. On one occasion, they provided the ECC tape of the initial call by ACPD Corporal Foust reporting the crash of Flight #77. On another day, the ACPD introduced a cadaver dog with lacerated feet injured during search and rescue efforts. This filled a small but important public information void. The day following the story about the injured dog, a case of 50 "doggie booties" was delivered to the staging area at Station 5.

Managing donated goods and services was an unanticipated challenge. Private companies, charitable organizations, and citizens of Arlington and elsewhere

wanted to contribute goods, services, and money to the response effort. Fire Station 5, a highly visible public safety facility with a great deal of response related activity, became a natural depository for donated materials. Lieutenant Paul Larsen and his colleagues managing the staging activities found themselves acting as supply agents, receiving and storing boxes of underwear, 1,000 donated pillows, a delicatessen worth of food items, and that case of doggie booties. This was a countywide phenomenon and must be dealt with comprehensively by Arlington County. Citizen participation must be encouraged, appreciated, and properly channeled.

After the end of the response operations, the ACPD made a special effort to thank those organizations and agencies that provided support, sending letters of appreciation to vendors and individual citizens who provided goods or services.

Beginning on Day 4, the ACPD assigned an officer to record activities that can be used in the next CALEA accreditation assessment. The experience gained during the Pentagon response covered many assessment standards, including jurisdiction and mutual aid; operational readiness; EAP; special purpose vehicles; unusual occurrences; media; communications; and collection and preservation of evidence.

Many county employees and volunteers were assigned to support the programs implemented for family members of missing victims at an Arlington hotel. They were told to park their automobiles in a regularly restricted area and that parking violation tickets would not be issued. Not all members of the ACPD were informed of this policy and several tickets were issued and later forgiven.

Expressions of public gratitude continued long after the response ended. Requests for ACPD "heroes" to attend and be recognized at public gatherings continued for months after the incident response. At some point, these well-intended gestures become almost divisive, as others in the department who did everything asked of them, and often much more, go unnoticed.

The Arlington County CEMP does not provide ACSO presence at the EOC. However, Sheriff Arthur and Chief Deputy Sheriff Raffo immediately reported to the EOC to offer ACSO assistance. An ACSO representative remained at the EOC during operations. They provided emergency vehicles to transport county officials throughout the area and escort supply trucks to the Pentagon. Because of the demands on Assistant Manager Bridges, he was assigned a full-time deputy and an ACSO vehicle.

The ACSO does not have the resources for intense operations of protracted duration. Off-duty personnel can augment on-duty staff, but only in an overtime capacity.

On the afternoon of September 11, the Arlington County Emergency Management Team at the EOC requested that the ACSO arrange for its vendor, ARAMARK, to provide 1,000 hot meals for responders at the Pentagon. ARAMARK prepares meals for inmates and ACSO staff at the county detention facility. Usually, when the EOC is activated, ARAMARK provides about 30 meals

to the Emergency Management Team and supporting county employees. A second order for 1,000 meals was placed at 7:00 p.m. that evening, as well as an order for 3,000 snack bags. ARAMARK staff from the Alexandria and Fairfax County correction facilities helped fill these requests from the kitchen at the Verizon building in Arlington.

Recommendations and Lessons Learned

Arlington County should work with neighboring jurisdictions and other emergency response agencies and volunteer organizations to implement a uniform identification system. Such a system should be in place and used routinely but should provide a starting point to rapidly expand the credentials process during a large-scale emergency. (LE-021)

Shift duration for emergency response operations should be standardized and uniform for all law enforcement personnel. It appears that a 12-hour shift is best suited for protracted operations. It has the advantage of placing all personnel into a single resource pool. Days off should be factored into the schedule from the start. (LE-022)

The ACPD should acquire an AVL system to track the locations of its patrol fleet. (LE-023)

It is important to develop a plan early regarding how, when, and where to use mutual aid and to request such aid in specific detail to avoid confusion and misunderstanding. (LE-024)

When other agencies request law enforcement support, such as closing a particular road or clearing a parking area, it is important to record the details of the request and the person making it to ensure it is legitimate and based on proper authority. (LE-025)

The public needs a place to visit to feel part of the incident response. Determine an appropriate location considering safety, security, and area traffic. Sensitize police officers to the tremendous impact of such horrendous incidents on the entire community. (LE-026)

Agencies engaged in extended response operations should expect participants to become fatigued. Train supervisors to recognize the early signs of fatigue and act quickly to provide relief, recognizing the reluctance of participants to leave the job. (LE-027)

Law enforcement agencies working with responsible government officials should follow the example of the ACPD and Arlington County public affairs and help the media find good stories that exemplify the work of all parties engaged in the response. (LE-028)

Law enforcement agencies should include nonsworn employees and personnel from supporting government agencies in briefings or tours of the incident site.

Their support and understanding are important to a successful response and recovery. (LE-029)

Requests for continuing public recognition following a major incident response should be referred to the appropriate local government official, in this case the Arlington County Assistant Manager for Public Affairs. That official can determine whether or not and in what manner to comply with the request. (LE-030)

The ACPD should work jointly with the DPS to prepare the entry points established on the Pentagon perimeter for use during future emergencies. Such preparations might include permanent shelters for law enforcement personnel and electronic connectivity for telephones and computers. The ACPD, DPS, and the ACFD Logistics Officer should collaborate on a system to inform entry point security officers about schedules for anticipated deliveries. (LE-031)

Maximum safe speed limits should be posted and strictly enforced on incident site grounds to avoid placing at risk responders helping others in jeopardy. The Incident Commander should establish these safeguards in conjunction with the Operations Section Law Enforcement Branch and the Incident Safety Officer. (LE-032)

CISM proved to be a valuable part of the public safety response operations. Too often, individuals in high-risk occupations fail to acknowledge their own mortality and the legitimate need for psychological as well as physical renewal. Arlington County government needs to continue incorporating CISM into all activities so its services are fully appreciated and sought when crises occur. Senior leaders are not immune from the stress-induced damages of WMD incidents and should ensure they protect and rehabilitate themselves as well as those entrusted to their care. (LE-033)

As in this incident, in future extended response operations, Arlington County should establish a citizens' "hotline" to receive and coordinate offers to donate goods and services. An improved database should be developed to track offers of support and manage the process. (LE-034)

The Arlington County CEMP should be revised based on experience gained during the Pentagon attack. Workspace should be provided for the ACSO consistent with responsibilities included in the CEMP. (LE-035)

The ACPD and ACSO should review standard PPE and upgrade it to meet the protection requirements appropriate for activities identified in the CEMP. Recommended PPE for law enforcement officers is specified in a November 1999 report issued under the auspices of the Chemical Warfare Improvement Response Program (CWIRP). (LE-036)

PART II

DEFENSE PROTECTIVE SERVICE

SECTION 1: INITIAL RESPONSE

Observations

The DPS is the law enforcement agency responsible for the Pentagon and 24 additional off-site DoD locations in the Washington Metropolitan Area. It provides a full range of law enforcement and security services. DPS Headquarters is located inside the Pentagon, which is served by 303 officers and supervisors under the leadership of Chief Jester. All 251 armed officers of the Law Enforcement Division are graduates of the Federal Law Enforcement Training Center at Glynco, GA. The Law Enforcement Division Operational Services Branch provides around-the-clock police services and includes a Special Operation Detachment consisting of the Emergency Services Team, the Protective Services Unit, and a K-9 Unit with explosive detection capabilities. The Law Enforcement Division also manages more than 400 contract guards that staff their off-site facilities. The 51-person Security Services Division is the non-sworn (unarmed) part of the DPS responsible for administrative matters, transportation and equipment, and court liaison.

On the morning of September 11, 2001, Chief Jester was in his Pentagon office watching television reports of the first World Trade Center attack. When the second World Trade Center attack occurred, he immediately increased the DPS security level and ordered additional outside patrols. Shortly after issuing these orders, he felt the building shake and saw smoke from his office window. He immediately went to the DPS Communications Center for a damage assessment, but the closed circuit television security camera nearest to the point of impact had been destroyed by the crash.

DPS Chief John Jester.

The DPS response was almost instantaneous as some officers witnessed the crash and went immediately into action. They helped injured victims find their way out of the building, activated fire alarms throughout the Pentagon, guided building evacuation, and helped seal off and secure the impact area. Even though smoke filtered into the DPS Communications Center within the first hour after the attack, DPS staff made the necessary notifications, contacting the Arlington County ECC, FBI, ACPD, and MDW. They also began recalling off-duty officers.

Findings

The first actions by DPS officers were fighting the fire, helping injured victims to safety, directing building evacuation, and securing the incident site. DPS personnel collected as many fire extinguishers as possible and attempted to put out fires. Others ran through the corridors and hallways activating fire alarms and helping occupants evacuate the building. Initially, all building occupants were directed to exit through the north side of the Pentagon. Still other DPS officers set up a perimeter around A-E Drive and the crash site to keep people away from those areas.

Evacuation.

By agreement with the DPS, the ACPD secured the outer perimeter around the Pentagon, established traffic control, and closed access roads. The DPS secured the building, staffed all entrances, and guarded high-risk areas, such as the Secretary of Defense's office complex. Chief Jester indicated there was instant trust among emergency response agencies since they have worked together on many incidents and special events in the past.

Many military personnel working in the Pentagon wanted to help the DPS officers and other responders immediately after the attack. They were neither equipped nor trained to do so and, in most instances, could best help by evacuating the premises themselves.

The Pentagon evacuation plan requires that every office publish and prominently display primary and alternative building evacuation routes and assembly areas. Although evacuation drills are scheduled quarterly, participation is encouraged but not mandated.

Most building occupants realized this evacuation was real. However, there were instances where personnel were unfamiliar with evacuation routes and became confused. Some personnel, working in secure areas on sensitive issues, had to be convinced of the seriousness of the events for them to evacuate. Because of the size and design of the Pentagon, building occupants working in offices on the opposite end from the crash site were not immediately aware of the attack.

DPS officer on security patrol.

Armed DPS officers are not permitted to carry weapons while off duty. The area where weapons were stored was damaged in the attack, making the retrieval of those weapons difficult. Weapons are needed in the performance of their duties, including providing armed escorts for transporting classified materials.

During the first 2 hours of the incident, traffic congestion and closed roadways made it difficult for recalled DPS personnel to reach the Pentagon.

Twelve-hour shifts were immediately established for all DPS personnel.

DPS Deputy Chief John Pugrud went to the ACPD commander at the ACPD auxiliary command post in the Center Courtyard and offered the support of eight DPS Security Services personnel.

Recommendations and Lessons Learned

Evacuation drills should be conducted monthly and should be mandatory for all Pentagon occupants. The Pentagon will always be an attractive target to terrorists. Officials cannot afford to rule out the possibility of another attack. (LE-037)

The weapons policy for armed DPS officers should be reviewed. An alternative weapons storage site should be explored. In addition, the legal and policy implications of allowing DPS officers to carry their weapons while off duty warrants review. (LE-038)

The DPS should conduct regular tabletop exercises with area law enforcement and fire and rescue agencies at the Pentagon and other facilities protected by the DPS. Tours and orientations should be regularly presented to the ACFD and other area public safety agencies. (LE-039)

SECTION 2: COMMAND, COMMUNICATIONS, AND THE INCIDENT COMMAND SYSTEM

Observations

The DPS operates under the ICS for emergency response. Chief Jester served as the DPS Incident Commander for the Pentagon response, establishing the DPS Communications Center as the ICP. An auxiliary DPS command post was established in the Center Courtyard where DPS Security Services supported the ACFD.

The DPS established immediate contact with the ACFD Incident Commander and the FBI On-Scene Commander. Direct and continuous coordination with the FBI was essential so evidence recovery efforts also contributed to the process of gathering DoD classified documents, materials, and storage containers mixed in the rubble. At shift changeover, DPS Security Services personnel coordinated with the incoming and outgoing FBI Evidence Recovery Team leaders at the FBI ICP and at the North Parking Lot area evidence collection site. This continuous coordination reduced and resolved problems and precluded misunderstandings. These critical communications ensured the FBI understood the valid mission of DPS Security Services and was able to help in the effort. DPS Security Services personnel worked diligently to secure classified materials, but did not hinder the rescue, recovery, and crime scene operations.

Findings

Interacting with military personnel was occasionally frustrating because they were unfamiliar with the ICS.

DPS representatives attended FBI shift-change briefings, ACFD Unified Command team meetings, and worked at the JOC after it opened on September 12.

The initial building evacuation was accomplished in less than 1 hour. The public address (PA) system "Giant Voice" was used with a prerecorded message modified to convey specific instructions regarding this event; for example, building occupants were instructed to exit on the north side of the Pentagon. This recording continuously repeated throughout Wedges 3, 4, and 5 of the Pentagon. Because of the ongoing renovation work, the PA system was not functioning in Wedges 1 and 2 where the impact occurred.

Because the DPS did not have handheld bullhorns, officers had to knock on doors and enter offices to ensure all personnel got out safely.

The parking lots were evacuated quickly. Amazingly, only three vehicles had to be towed.

The DPS backup communications system is located at the Navy Annex, Federal Office Building 2 (FOB2), next to the Virginia State Police barracks overlooking the Pentagon. Had it been necessary to relocate the DPS Communications Center to this site, communications would have been interrupted for

approximately 45 minutes. The backup communications system has never been tested.

Cellular and landline telephone communications were virtually unreliable or inaccessible during the first few hours of the response. However, as time progressed, cellular telephone communications were helpful as the volume of radio traffic continued at a higher than normal level. On the afternoon of September 11, Verizon technicians and the USSS technical staff installed portable cellular towers onsite at the Pentagon. This significantly increased cellular telephone access. A cache of cellular telephones was also provided by both organizations.

The DPS issued new cellular telephones to the on-duty shift and distributed the new telephone numbers to the ACFD Incident Commander, the FBI, and other response organizations. When the shift change occurred, new telephones were issued to the replacement personnel. As a result, a second telephone directory had to be distributed with new numbers for each DPS position. Incumbent officers should have surrendered the cellular telephones to their replacements, avoiding the need to distribute a second telephone number directory.

DPS Security Services Division personnel do not have assigned radios. Thus, they were initially unable to communicate by radio with DPS law enforcement officers. This lack of communication was debilitating because Security Services personnel are not armed and require a DPS law enforcement escort when transporting classified materials. Portable communications would have enhanced operations for DPS Security Services, allowing communications with the DPS Incident Commander and accelerating requests for armed escorts. The DPS acquired additional portable radios and issued them to Security Services.

Recommendations and Lessons Learned

The DPS should offer to Pentagon building occupants a regular orientation or videotape describing the ICS and how it functions. This initiative should be undertaken in coordination with the ACFD and MDW so it is also available to other DoD sites. (LE-040)

As the Pentagon renovation work continues over the next decade, the DPS should consider expedient alternatives to disseminate emergency information in those Wedges undergoing construction. There are always large numbers of contractors and construction workers in those areas and, depending on the renovation status, others might also be occupying some of the space. (LE-041)

The DPS should procure bullhorns or other portable PA devices to augment the central system. (LE-042)

The backup communications system should be regularly tested, including relocating the DPS Communications Center staff. (LE-043)

Cellular telephones should be assigned to specific positions and passed along by each officer performing those duties so there is only one telephone directory. (LE-044)

All DPS personnel should have access to portable radios. (LE-045)

SECTION 3: OPERATIONS

Observations

The DPS has substantial capabilities and its personnel have extensive training and responsibilities. Officers of the DPS Law Enforcement Division are trained at the Federal Law Enforcement Training Center in Glynco, GA. They receive the same training as other Federal officers, including USSS and Immigration and INS officers. The 251 Law Enforcement Division officers patrol the Pentagon grounds, screen mail and courier packages, guard entrances and sensitive areas, respond to bomb threats, and manage the 400-person contract guard force that works at other DoD facilities in the area. The unarmed Security Services Division staff is certified in all aspects of physical and technical security. The 51 members of the DPS Security Services Division maintain alarm systems at the Pentagon and at the residences of the Secretary and Deputy Secretary of Defense. They also install and maintain electronic security, access control, and intrusion detection systems at the Pentagon, and operate the Pentagon employee and visitor pass systems. The Locksmith Branch is responsible for 3,500 Pentagon safes. The DPS has formidable capabilities to meet important responsibilities.

The duties performed in the aftermath of the terrorist attack on the Pentagon included many that were well outside the DPS charter. Acting in defense of the facility it is sworn to protect, DPS officers did whatever was required without question. No job was too demeaning or outside a DPS officer's scope of responsibility. Like other Pentagon response force organizations, the DPS stepped up to the challenge of the moment and performed admirably.

DPS assisting ACFD and Pentagon contractors.

DPS personnel provided a great deal of support to other responders. They identified specific locations, facilities, and materials so the FBI could establish its temporary morgue at the North Parking Lot area loading dock. The DPS also provided access to its warehouse on Eads Street near the Pentagon to store personal effects and crime scene evidence. The DPS delivered site maps, building diagrams, and floor plans to the Incident Commander and arranged for use of Pentagon facilities, such as conference and briefing rooms when needed.

Findings

Mandatory 12-hour shifts were instituted for all DPS personnel shortly after the incident occurred. Twelve-hour shifts simplified and helped organize staffing. However, because of the shortage of personnel, the DPS was unable to perform some important functions. For example, it would have been beneficial if a DPS officer was assigned to help the ACPD and Virginia State Police at each of the six entry gates onto the site. There simply were not enough personnel to meet all requirements.

DPS officers were organized into squads during the response with each squad supervised by a sergeant. The sergeant was responsible for safety and break schedules for the squad.

DPS contract security guards assigned to off-site facilities cannot be used to augment DPS personnel during emergencies. They are hired for specific assignments and the contractor is not obligated to maintain a reserve force. The DPS does not have a mechanism in place to hire additional temporary security guards during a crisis.

DPS personnel performed many nontraditional and unexpected assignments as part of the response effort. Classified materials had to be gathered and secured. The contents of storage containers found in the damaged area of the Pentagon had to be inventoried and secured. Safes in damaged offices had to be opened and the contents verified. Security support was required at locations in addition to the usual DPS patrol areas and Pentagon entrances, such as the sifting site and temporary morgue.

Opening safes to verify contents and determine ownership was problematic. Blast and heat from the crash damaged combination locks and fused safe doors shut. In many instances, name plates and identifying information usually found on the outside of a safe had been destroyed. The DPS purchased two devices known as "Jaws of Life," which allowed them to open about 250 safes. In some cases, custodial information required to be stored inside the safe was missing or not current. There was no master roster of personnel assigned responsibility for the many classified containers. The DPS had to contact Pentagon security managers to make decisions regarding the disposition of classified materials.

A collection point vehicle for storing classified materials and storage containers was initially located on the outside of the perimeter on Route 27. It was

eventually moved inside the perimeter, which mitigated concerns about its security and prevention of unauthorized access.

Because DPS Security Services personnel are unarmed, an armed escort was requested each time classified materials were transported to the collection point. This was a 24-hour a day operation. Personnel from the 310th Military Intelligence Battalion at Fort Meade, MD, assisted the DPS in this operation.

DPS personnel are not issued PPE. The FBI provided gloves, Tyvek® suits, and rubber boots to DPS officers working in hazardous areas.

Security had to be established on each floor of the Pentagon to keep personnel away from the impact area. Keeping personnel from returning to their offices in restricted areas was a difficult challenge. This was complicated by the fact that, in some instances, there was little or no visible damage but the areas contained hazardous materials (HazMat) in the form of asbestos, mold, and lead from paint.

Military personnel relieved the DPS of some of its security functions after the fifth day, providing the DPS a chance to restaff and realign priorities. Those who replaced DPS officers inside the Pentagon had even greater difficulty preventing higher-ranking military officers from retrieving items from their offices. Eventually, plywood walls were constructed to seal off these restricted areas.

The DPS produced a list of points of contact for the FBI to assist in retrieving classified documents, materials, and storage containers and answer questions regarding breached security areas.

Eventually, a strict approval process was established by the JOC in coordination with the Incident Commander, FBI, and MDW and procedures were implemented for retrieving important items from the damaged area.

To help visitors and vendors negotiate the area around the Pentagon, the DPS prepared a large site locator board that displayed the location of every agency represented at the incident site. The board was posted at Gate 3 and proved very helpful. (See Figure C-4.)

Because site access became such a critical issue for the FBI, the DPS provided its portable badging system to produce credentials for approved personnel. The DPS system proved inadequate for such a massive task. Therefore, the DPS pass office supervisor, in coordination with the FBI, contacted the USSS for assistance. The USSS brought six portable badging machines to the site, instructed U.S. Army Band members from Fort Myer how to operate them, and performed this function throughout the remainder of the incident response.

CISM personnel were available for DPS personnel throughout the incident response and remained available for followup. Participation in the program is not mandatory. Additionally, Lockheed Martin provided an air-conditioned trailer located at Gate 3 for rest and rehabilitation.

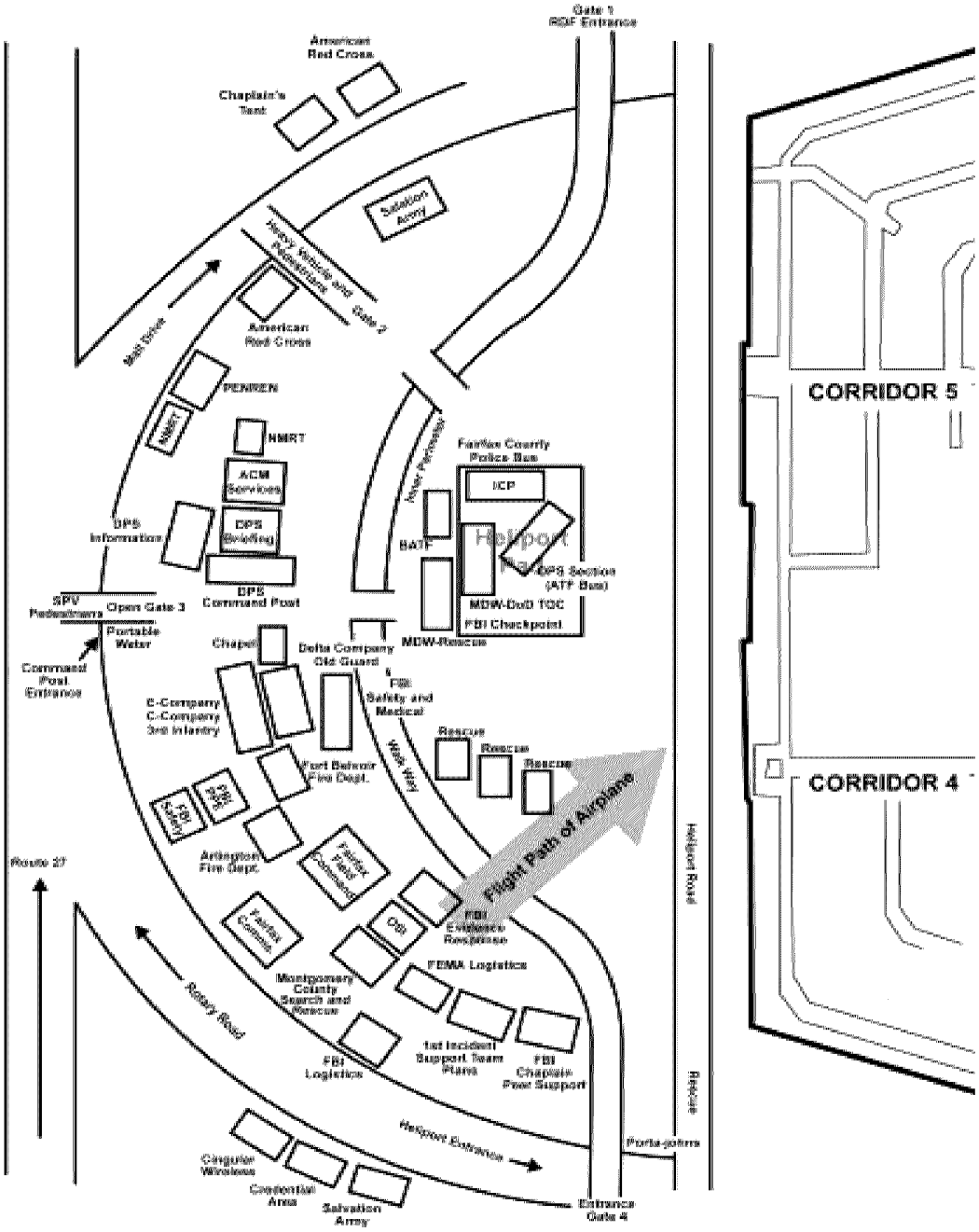


Figure C-4. Locations of agencies, organizations, and operational sites.

The DPS was able to draw on the experience of previous interaction with many of the responding agencies. The USSS, DC Metropolitan Police Department, Virginia State Police, ACPD, and MDW frequently work together when dignitaries visit the Pentagon. Events such as the annual Marine Corps Marathon engage most area law enforcement and Emergency Medical Services (EMS) agencies. Area fire, rescue, medical, and law enforcement agencies regularly participate together in tabletop and full-scale exercises. Chief Jester attributes the high degree of trust and cooperation to these experiences and others like them.

Recommendations and Lessons Learned

The DPS needs to evaluate the disposition of its officers throughout the 2-week incident response and crime scene investigation. It is possible that some functions can be met by other organizations through preestablished mutual agreements, freeing DPS staff for more critical tasks, such as helping with entry gate access control. (LE-046)

The DPS should consider negotiating a standby contract with one or more private security firms to backfill some routine DPS functions during emergency operations. (LE-047)

The DPS should consider establishing a reserve force that can be activated under emergency conditions. (LE-048)

The nontraditional duties performed by the DPS need to be recorded and incorporated into plans for possible future WMD events. Such items as the Jaws of Life devices should be procured, along with some minimum configuration of PPE and other items that proved helpful, and should be stored for quick retrieval. (LE-049)

The DPS should meet with Pentagon custodians of classified materials and review requirements for marking classified material storage containers. Such containers must be regularly inspected to ensure inventories of contents are current and contain all required information. (LE-050)

A collection point for classified materials recovered during a major event, such as the Pentagon attack, need to be planned for in advance. It should be located a safe distance from the building in a location that it is not likely to be exposed to the same risk, and in an area that can be readily secured. (LE-051)

Contaminated or otherwise high-risk areas at an incident site must be sealed off and secured quickly, and building occupants should be informed not to attempt to reenter those areas. The procedures established by the JOC for retrieving items from damaged areas need to be documented and promulgated in operations plans of all the responding organizations. (LE-052)

DPS personnel should receive regular orientations on CISM resources and should be encouraged to take advantage of such services. Supervisors should stress the value of CISM. (LE-053)

The DPS should continue to schedule regular tabletop exercises, such as "Abbottsville," and host full-scale WMD exercises such as "Cloudy Office." (LE-054)

PART III

FEDERAL BUREAU OF INVESTIGATION

SECTION 1: INITIAL RESPONSE

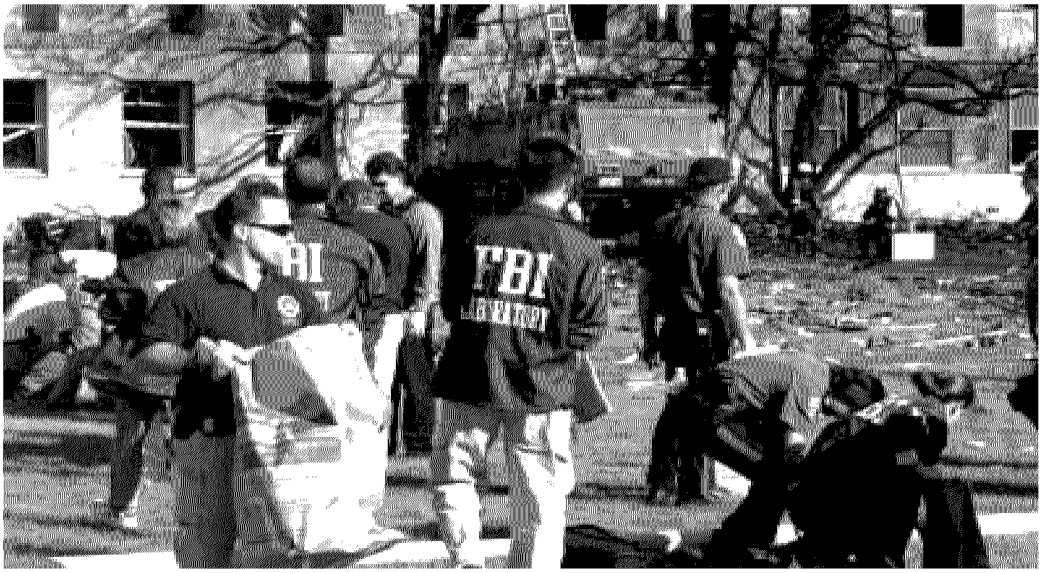
Observations

Of the four senior leaders, only SAC Arthur Eberhart, in charge of the Administrative and Technical Division, was present at the FBI WFO on the morning of September 11. ADIC Harp was in South Carolina. SAC Timothy Bereznay was appointed to the position of National Security SAC, but had not yet reported to the WFO. SAC Ellen Knowlton, who headed the Criminal Investigative Division had recently been reassigned to FBI Headquarters. When the second airliner hit the World Trade Center, SAC Eberhart activated the WFO Command Center and began making plans to support New York City. SAC Eberhart ordered the notification and recall of the NCRS. Special Agent Christopher Combs of the NCRS was teaching a class at the District of Columbia Fire Academy when he received the page from the WFO Command Center.

At about 9:20 a.m., the WFO Command Center was notified that American Airlines Flight #77 had been hijacked shortly after takeoff from Washington Dulles International Airport. SAC Eberhart dispatched a team of 50 agents to investigate the Dulles hijacking and provide additional security to prevent another. He sent a second team to Ronald Reagan Washington National Airport as a precautionary step. At the WFO Command Center, Supervisory Special Agent (SSA) Jim Rice was on the telephone with the Pentagon when Flight #77 crashed into the building.

En route to the WFO after picking up fresh clothes for the anticipated New York deployment, Special Agent Combs was monitoring the DC Metropolitan Police Department radio frequency and heard a report of an explosion at the Pentagon. He immediately changed direction and headed to the Pentagon. Within minutes of the attack, he was at the Pentagon meeting with Assistant Chief Schwartz, the ACFD Incident Commander. As the NCRS Fire and Rescue Liaison, Special Agent Combs knew Chief Schwartz and most of the other area fire and rescue leaders.

The FBI NCRS and JTTF were dispatched to the Pentagon, with the Crime Scene Team onsite 30 minutes after the attack. Special Agent John Adams began organizing the FBI Evidence Recovery Team on a grassy site about 30 yards from the ACFD ICP. Special Agent Combs set up the FBI Command Post adjacent to the ACFD ICP. FBI agents began searching for aircraft parts and other evidence on the Pentagon grounds, being careful not to interfere with fire and rescue efforts.



Evidence collection.

At about 10:15 a.m. on September 11, the WFO Command Center was notified by the Federal Aviation Administration (FAA) that another airliner, United Airlines Flight #93, was hijacked after taking off from Newark, NJ, and was flying on a course from western Pennsylvania toward the Washington Metropolitan Area. The FAA estimated it would reach Washington, DC, in 20 minutes. The Command Center relayed the information to Special Agent Combs at the ACFD ICP who alerted Chief Schwartz. Special Agent Combs located a Washington Metropolitan Airports Authority (WMAA) firefighter equipped with a radio and confirmed the information about Flight #93. Chief Schwartz ordered a complete area evacuation, directing the response force to relative safety beneath nearby highway overpasses. Special Agent Combs stayed at Chief Schwartz' side, giving him updates as the FAA tracked the course of Flight #93. The last update came when the airliner was 4 minutes away from the Pentagon. Five minutes later, Special Agent Combs reported to Chief Schwartz that Flight #93 had crashed into Camp David in Maryland. In fact, it crashed in a field near Shanksville, PA. Chief Schwartz sounded the all clear.

The WFO Command Center is capable of supporting large-scale emergencies and special events. As the response to the attack on the Pentagon took shape, FBI command personnel at the WFO focused on conducting hijacking investigations; preventing additional terrorist attacks; determining who was responsible for the attacks that had occurred; increasing protection levels for FBI Director Robert Mueller and Attorney General John Ashcroft; responding to additional threat reports; and executing continuity of government plans.

Findings

Notification and recall procedures are not usually a problem for the FBI. However, on September 11, there were serious difficulties getting FBI personnel from Washington, DC, across the Potomac River bridges to the Pentagon. In many instances, FBI agents responding from Quantico, VA, 35 miles away, arrived sooner than those did from just across the Potomac River in Washington, DC.

Usually, additional FBI personnel would immediately be flown into the Washington Metropolitan Area to help with the investigation. However, on September 11, getting additional and critical FBI personnel to the Washington Metropolitan Area was problematic. All aircraft were grounded and airports across the Nation were closed. The FBI had to obtain special FAA permission to send an aircraft to South Carolina and bring WFO ADIC Harp back to Washington, DC.

Because of the large volume of reports received at the WFO Command Center, many of which containing conflicting information, it was difficult to comprehend the scope and magnitude of the events unfolding on September 11, 2001. The FBI was confronted with several simultaneous emergency situations. An airliner had been hijacked after departing Washington Dulles International Airport. That incident had to be investigated and other hijackings had to be prevented. The terrorist attack on the Pentagon required full mobilization to conduct the crime scene investigation, collect evidence and recover bodies of victims, and establish and manage a JOC. At the same time, the WFO had to provide security for FBI Headquarters and the DOJ, and investigate bomb threats and other reported incidents in the Nation's capital. There was great concern that additional "terrorist sleeper-cells" might become active and perpetrate further attacks.

With one forward command post already in operation at Washington Dulles International Airport, the FBI WFO was challenged to deploy sufficient numbers of experienced senior managers and supervisors to the Pentagon in the first hours after the attack. SAC Eberhart and SSA Rice were fully occupied at the WFO Command Center. On September 11, Assistant Special Agent-in-Charge (ASAC) Robert Blecksmith, who reached the Pentagon at midday, was the senior FBI agent at the scene. He immediately requested additional supervisor-level agents with terrorist response experience.

On the afternoon of September 11, the FBI established a command post at the Virginia State Police Barracks adjacent to the Navy Annex, where ASAC Blecksmith had relocated the FBI Unified Command Post.

The WFO has extensive experience working with other Washington Metropolitan Area response organizations. The annual State of the Union Presidential Address, Inauguration ceremonies, international conferences such as the International Monetary Fund meetings, visiting heads of State, and similar events engage law enforcement agencies from all area jurisdictions. Multiagency terrorism training exercises, such as Top Officials (TOPOFF), also provide valuable experience upon which to draw in an emergency.

Recommendations and Lessons Learned

Because of the dependence on bridges for vehicular mobility from the District of Columbia to Virginia, FBI helicopters should be assigned to the WFO to airlift critical personnel and resources. (LE-055)

The WFO should review current staffing levels to ensure it has adequate senior leadership and sufficient experienced managers so response capabilities to multiple simultaneous incidents are not at risk. (LE-056)

The FBI WFO should engage all its senior leadership in joint terrorist response exercises. The WFO should also exercise the next management level to serve in positions usually filled by the senior leaders in the event those leaders are not available. (LE-057)

WFO should evaluate the computing and communications capabilities and staffing levels of the Command Center to ensure it can support multiple simultaneous events for an extended time. The mobile command vehicle also needs modernization. (LE-058)

The benefits of the NCRS fire and rescue liaison function were evident in this incident. The FBI staff onsite understood the ACFD ICS and the ACFD knew what to expect from the FBI. The WFO should consider expanding this outreach program to other response organizations. It should also be implemented in every FBI field office in metropolitan areas. (LE-059)

The WFO should continue to participate in and even plan major terrorist training exercises involving the Washington Metropolitan Area response community. (LE-060)

SECTION 2: COMMAND, COMMUNICATIONS, AND THE INCIDENT COMMAND SYSTEM

Observations

The FBI had many responsibilities in the wake of the September 11 terrorist attack on the Pentagon. Because of the nature of the event, the FBI had to establish control of the crime scene and begin collecting evidence. However, although the FBI was responsible for the crime scene, it was not responsible for the fire and rescue incident that took precedent on that day. That role belonged to the ACFD. Assistant Chief Schwartz was the designated Incident Commander and would remain so until fire and rescue operations were completed and the site turned over to the FBI on September 21. Throughout the fire and rescue phase, the FBI supported the ACFD and worked in conjunction with search and rescue units while collecting evidence and recovering the remains of victims. Additionally, in accordance with the Interagency Domestic Terrorism Concept of Operations Plan (CONPLAN), the FBI was responsible for activating a JOC to coordinate the activities of the responding Federal Departments and agencies.

The FBI began meeting its responsibility to the ACFD by assigning Special Agent Combs as agency representative to the Incident Commander. Special Agent Combs is the NCRS Fire and Rescue Liaison and already had close working relations with leaders throughout the Washington Metropolitan Area public safety community.

The FBI on-scene criminal investigation got under way immediately, as Special Agent Adams, a member of the NCRS Evidence Recovery Team, organized the crime scene investigation. He established a Logistics Branch, an Evidence and Body Recovery Branch, and a Temporary Morgue Branch. Special Agent Adams also directed initial evidence collection on the Pentagon grounds, avoiding interference with fire and rescue activities.

Shortly after noon on September 11, ASAC Blecksmith arrived at the Pentagon, along with SSAs Rick McFeely and John Kerr. ASAC Blecksmith was the senior FBI official at the Pentagon on September 11. He concentrated his efforts that afternoon and evening on locating and equipping the JOC.

On the afternoon of September 14, SAC Eberhart was finally free of duties at the WFO Command Center and took command of the FBI crime scene investigation at the Pentagon. Although SAC Bereznay was in charge at the Fort Myer JOC, it was 3 days into the event before an FBI SAC was available to take command of operations onsite at the Pentagon. At a brief 7:00 a.m. ceremony on September 21, Chief Schwartz passed responsibility for Incident Command to SAC Eberhart. The fire and rescue phase was complete. The Pentagon was now a crime scene—the sole domain of the FBI. One week later, on September 28, 2001, SAC Eberhart returned control of the Pentagon to Major General James Jackson, representing the DoD.

Instructing evidence collection sweep.

Findings

Special Agent Combs has worked closely with ACFD firefighters and the fire departments of other local jurisdictions since assuming his position with the NCRS in 1998. He is intimately familiar with the ICS and well-known by ACFD Chief Plaugher and Assistant Chief Schwartz.

ASAC Blecksmith capitalized on Special Agent Combs' knowledge and relationships, keeping him closeby as he began organizing the FBI presence and establishing a JOC. Because the area immediately around the ACFD was crowded and offered little in the way of support facilities, ASAC Blecksmith decided to relocate and establish a Unified Command at the Virginia State Police Barracks located adjacent to the Navy Annex overlooking the Pentagon. From that location, ASAC Blecksmith, along with Special Agent Combs and others, made plans to activate the JOC at nearby Fort Myer.

During this period, at the ACFD ICP, Chief Schwartz did not have an FBI representative at his side. Special Agent Adams periodically checked in at the ICP from the nearby Evidence Recovery Team Command Post, as did SSA Jim Rice after he took over the criminal investigation operation on the morning of September 12. The FBI Mobile Command Post deployed to the Pentagon and was positioned close to the ACFD Operations Section near the heliport. Special Agent Combs was eventually reassigned to the ICP on September 13, restoring person-to-person communications between the Incident Commander and the FBI.

On the afternoon of September 11, Dr. Marcella Fierro, the Virginia Chief Medical Examiner, met with ASAC Blecksmith and asserted the responsibility of her office regarding the autopsies of victims of the terrorist attack. The FBI felt strongly that the Armed Forces Institute of Pathology (AFIP), with which the FBI has long-standing working relations, should perform the autopsies. Dr. Fierro requested and received a letter from Attorney General Ashcroft transferring responsibility for the medical examinations to the FBI.

At about 5:00 p.m., the FBI settled on Building 405 at Fort Myer as the site for the JOC. A Fort Myer community center, the building was previously surveyed to determine its suitability to house a command center. Special Agent Paul Garten and Special Agent Jennifer Gant helped organize the JOC workspace and SSA David Raymond, Technical Security Section, oversaw the installation of the electronic infrastructure for the agency representatives who would staff the JOC beginning the next morning.

At about 7:00 p.m., Chief Schwartz held a meeting in the Secretary of Defense's media center in which he briefed all participating agencies in the ICS structure. A meeting followed this, at 8:00 p.m., involving a smaller number of key agencies to discuss the need to implement a true Unified Command. At the end of this meeting, the FBI announced that the JOC would be activated at 6:00 a.m. on September 12, and all agencies should assign a senior representative with decisionmaking authority to the JOC.

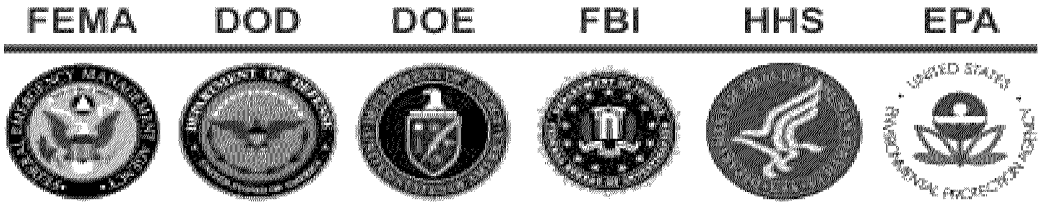
Chief Schwartz decided to relocate Incident Command to the JOC. He spent much of the remainder of that night and most of the next day at the JOC, but concluded that the Incident Commander's operational mission could best be met by relocating back to the incident site, which he did on the morning of September 13. He also asked that Special Agent Combs be reinstated as the FBI representative to the Incident Commander. Assistant Chief John White remained at the JOC as Chief Schwartz's representative.

When the JOC opened at 6:00 a.m. on September 12, there was considerable confusion. For many of the 26 JOC agency representatives, this was uncharted territory; it was on-the-job training. Many other agencies were unfamiliar with the operation and functions of the JOC. The FBI provided logistical and administrative support and staffed the intelligence desk.

SAC Bereznay, in his first assignment since his transfer to the WFO from FBI Headquarters, became the senior FBI official on the ground. The FBI did not activate a JIC in conjunction with the JOC. The DOJ had already announced that official comments about the World Trade Center or Pentagon attacks would only come from the office of the Attorney General. Because of the failure to establish a JIC, there was no single point of interface between participating Federal agencies and the media.

A total of 26 Federal, State, and county entities sent representatives to the JOC; however, neither the Department of Energy (DOE) nor the Department of Health and Human Services (HHS) were present. Both are members of the Concept of Operations (CONOPS) "Big Six" (i.e., the FBI, Federal Emergency Management

Agency [FEMA], HHS, DOE, DoD, and Environmental Protection Agency [EPA]). In addition, based on the nature of the terrorist attack, the Department of Transportation (DOT) or the FAA should have also had a JOC representative. On two occasions, information about unidentified aircraft approaching the Pentagon was transmitted directly from the control tower at Ronald Reagan Washington National Airport to the Arlington County ECC, which passed it on immediately to the Incident Commander. Chief Schwartz had no choice; in each case, he ordered a site-clearing evacuation. As it turned out, these were government aircraft escorted by jet fighters carrying senior government officials back to Washington, DC. These evacuations could have been avoided. They occurred when an FBI representative was not physically located with the Incident Commander. Unlike the earlier evacuation spurred by the hijacking of United Airlines Flight #93, the information given to Chief Schwartz did not come through the FBI and had not been verified by the FAA. An FAA representative was apparently present at the FBI Washington Metropolitan Area Strategic Information and Operations Center (SIOC), but that was of no consequence as events played out at the Pentagon.



Recommendations and Lessons Learned

During the response to a terrorist event such as the Pentagon attack, the FBI must maintain a continuous command-level physical presence with the Incident Commander. The FBI agency representative to the Incident Commander is a principal point of direct contact that must not be severed, even temporarily. He or she must be able to communicate with the FBI Command Post, in this case the WFO, and, if needed, the FBI SIOC so validated threat information is available to the Incident Commander. During a fire and rescue incident, the Incident Commander needs to be at the incident site directing operations. The FBI must also be there. (LE-061)

The FBI should survey government sites throughout the Washington Metropolitan Area and identify other facilities suitable to serve as a JOC or in other critical support roles, such as staging personnel or equipment. Building 405 at Fort Myer worked well housing the JOC and was previously surveyed for that purpose. One or two alternatives should be identified in other locations. (LE-062)

If a JOC is established, a JIC should also be activated. The participating response organizations need to speak with a single voice and media representatives must know where to acquire accurate coordinated information. That is the function of the JIC. (LE-063)

All organizations with positions in the JOC at all levels of government should designate in advance their representative, including a backup. Designated representatives should receive training and participate in periodic JOC exercises. They should have enough seniority to have decisionmaking authority. Other agencies not specified in the CONOPS but with particular domain expertise and authority, such as the FAA in this case, should be asked to send a representative to the JOC. (LE-064)

The WFO should plan ways to augment its senior leadership to effectively manage multiple simultaneous events. During the response to the terrorist attack on the Pentagon, it would have been desirable to have a SAC, or another senior person, at the WFO, the JOC, and the incident site. It took 3 days before such arrangements were in place. The FBI should consider forming a cadre of SACs trained and experienced in terrorist WMD incidents that can quickly deploy and augment local field office staff when needed. (LE-065)

SECTION 3: OPERATIONS

Observations

The FBI began collecting evidence immediately after arriving at the Pentagon incident site on September 11. As fire and rescue efforts proceeded, FBI activity involving evidence recovery and removal of bodies and body parts became a 24-hour operation. Special Agent Adams directed this phase of the criminal investigation during the day shift, with Special Agent Thomas O'Connor taking over at night. The FBI worked closely with FEMA US&R teams and the fire department Technical Rescue Teams (TRTs). Special Agent Adams and Special Agent O'Connor attended the preshift briefings by the US&R Incident Support Team (IST) coordinator. US&R and TRT members would first shore up an area to ensure it was reasonably safe, then begin hunting through the debris, searching primarily for surviving victims buried in the rubble.

FBI and US&R.

As they encountered bodies, parts of bodies, and other evidence linked to the crime, they called forward the FBI contingent assigned to each team. Each item was photographed, numbered, and tagged. This information, along with a diagram showing where the evidence was found, was given to one of the soldiers from the Army's Old Guard, the 3rd Infantry Regiment from Fort Myer, VA, who transported the human remains to the FBI's temporary morgue at the North Parking Lot loading dock. Sixty soldiers supported the FBI on each 12-hour shift.

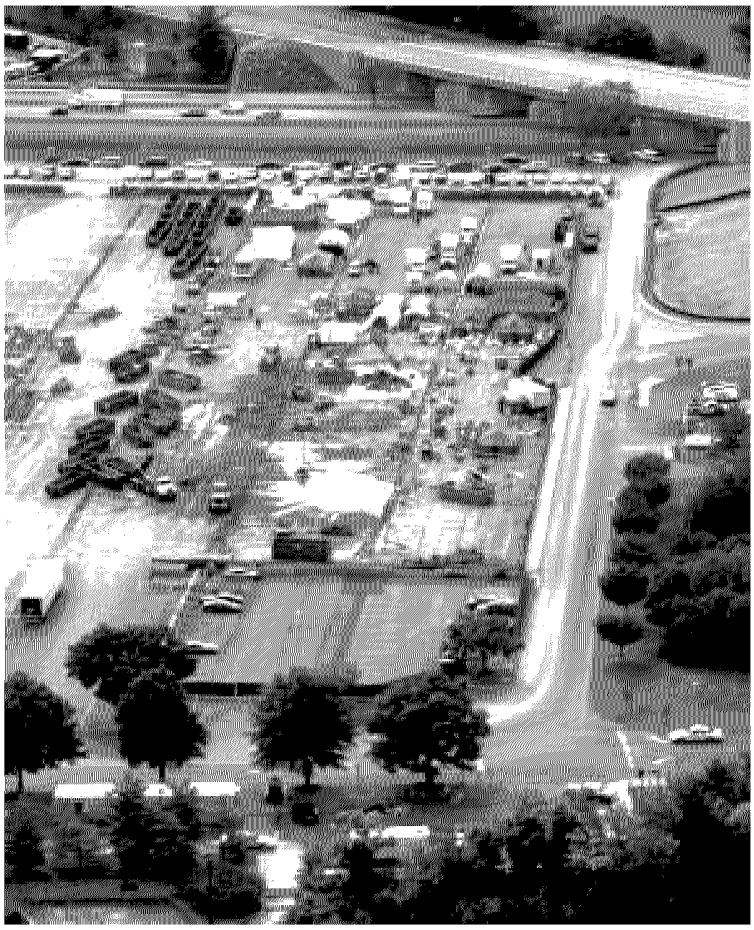
Remains recovery.

SSA Jim Rice assigned Special Agent Tara Bloesch to set up and manage the temporary morgue. Special Agent Bloesch had previous experience establishing morgue operations during FBI overseas operations in Kosovo and other overseas locations. She determined that the North Parking Lot loading dock was a suitable site. The doors remained closed except when receiving remains, and a large tarp was hung to safeguard the privacy of the morgue. The DPS, the FBI Critical Incident Response Group (CIRG), the ACPD SWAT team, the U.S. Marshals Service, and military police from MDW provided security at different times throughout the operation.

At the morgue, remains were photographed and labeled, and a record was prepared before they were released for transport. Twice each day, refrigerated trucks provided by the military carried remains to Davidson Army Airfield at Fort Belvoir, VA, where Army helicopters flew them to the AFIP at Dover Air Force Base (AFB), DE. FBI agents rode in the trucks, participated in the escort, and accompanied the remains during the flight to preserve the chain of custody. The Virginia State Police escorted the trucks to Fort Belvoir.

Because of the volume of debris inside the Pentagon, front-end loaders were used to load the debris in dump trucks, which carried the debris to a sifting operation in the North Parking Lot. Special Agent Samuel Simon and Special Agent Jeffrey Bedford ran the 2 shifts of the 24-hour a day sifting operation, which was extremely labor intensive. Volunteers from the FBI, Drug Enforcement Agency (DEA), EPA, BATF, Arlington County and mutual-aid law enforcement agencies, MDW, and others worked around the clock with 200 or more persons on each shift. BATF heavy equipment operators spread rubble from inside the Pentagon. Metropolitan Police Department cadaver dogs worked

through the debris, then volunteers carefully raked the area searching for body parts, personal effects, evidence, and classified documents. Papers of any type were turned over to the DPS to determine if they contained classified materials and, if so, to safeguard them. The sifting operation produced about 70 percent of the body parts processed at the morgue.



Remains and evidence sifting operation.

Findings

Only one of four senior WFO leaders was present at headquarters on the morning of September 11. Fortunately, SAC Eberhart had a great deal of related experience. He served as ASAC in New York when TWA Flight #800 crashed on July 17,1996. He also led the WFO Evidence Recovery Team to Kosovo during the war crimes investigation. More than 700 agents participated in the FBI operations at the Pentagon, deploying from Baltimore, MD; Richmond, Norfolk, and Quantico, VA; Charlotte, NC; Columbia, SC; Atlanta, GA; Los Angeles, CA;

and Philadelphia, PA. Supervisors are part of the responding FBI teams; nevertheless, with several concurrent incidents to deal with, the WFO was stretched thin during this period. SAC Eberhart was unable to deploy to the incident site until the afternoon of September 14. Although there were an ample number of FBI agents at the crime scene, experienced FBI supervisors were in short supply.

The FBI WFO had previously worked with the FEMA US&R teams and was familiar with their capabilities and methods of operating. The US&R teams used spray paint to mark the status of areas on panels and columns as they worked. The FBI adopted these markings as part of its recordkeeping. They served as a grid for identifying where evidence and remains were found.

US&R shoring and marking system.

The IST coordinator provided the FBI Evidence Recovery Team a US&R radio. This proved extremely helpful in summoning FBI assistance whenever US&R teams digging through rubble came across evidence or victim remains.

The EPA CID provided significant support to the FBI at the incident site. EPA CID personnel conducted evidence searches, performed facepiece fit-tests, helped in evidence recovery and sifting operations, and provided safety oversight.

The U.S. Air Force (USAF) OSI operated adjacent to the FBI and worked closely with them throughout the crime scene investigation. USAF OSI was particularly valuable in retrieving highly sensitive classified materials from the Pentagon.

The BATF deployed both the southeast and northeast National Response Teams (NRTs) to the Washington Metropolitan Area. These 30-person teams comprise veteran agents with expertise in forensics, fire and blast origin, explosives detection, fire protection, and other relevant areas. Some team members are qualified heavy equipment operators. Teams also include technical, legal, and intelligence advisors. By September 13, the BATF had 47 persons onsite at the Pentagon.

The success of the FBI operations at the Pentagon depended on harmonious working relationships with the ACFD Incident Commander, military leaders, DPS, and other law enforcement agencies. The BATF provided valuable assistance to the FBI operations, but working relations between the FBI and BATF were sometimes strained. The BATF usually works in an independent role and does not generally operate in support of other law enforcement organizations.

Relations between the FBI, the ACFD, and the entire Washington Metropolitan Area fire and rescue community were outstanding, thanks largely to the work of Special Agent Combs. The FBI understood the ICS, and the fire community knew what to expect from the FBI.

Holding a small but official ceremony marking the change of Incident Commander responsibilities was important. It was clear to everyone that the ACFD was in charge during the 10-day fire and rescue phase and equally clear that the FBI was in charge beginning on September 21.

Controlling access to the crime scene was a challenge. A second mesh fence was erected to create an inner perimeter, separating the fire and rescue site and crime scene from the larger response assembly and support area. (See Figure C-5.) An attempt at issuing identification (ID) badges using the DPS system proved cumbersome and inadequate. The process took too long, delaying shift changes inordinately. At the request of the FBI, the USSS deployed five portable units and trained U.S. Army Band members to produce ID badges for authorized responders.

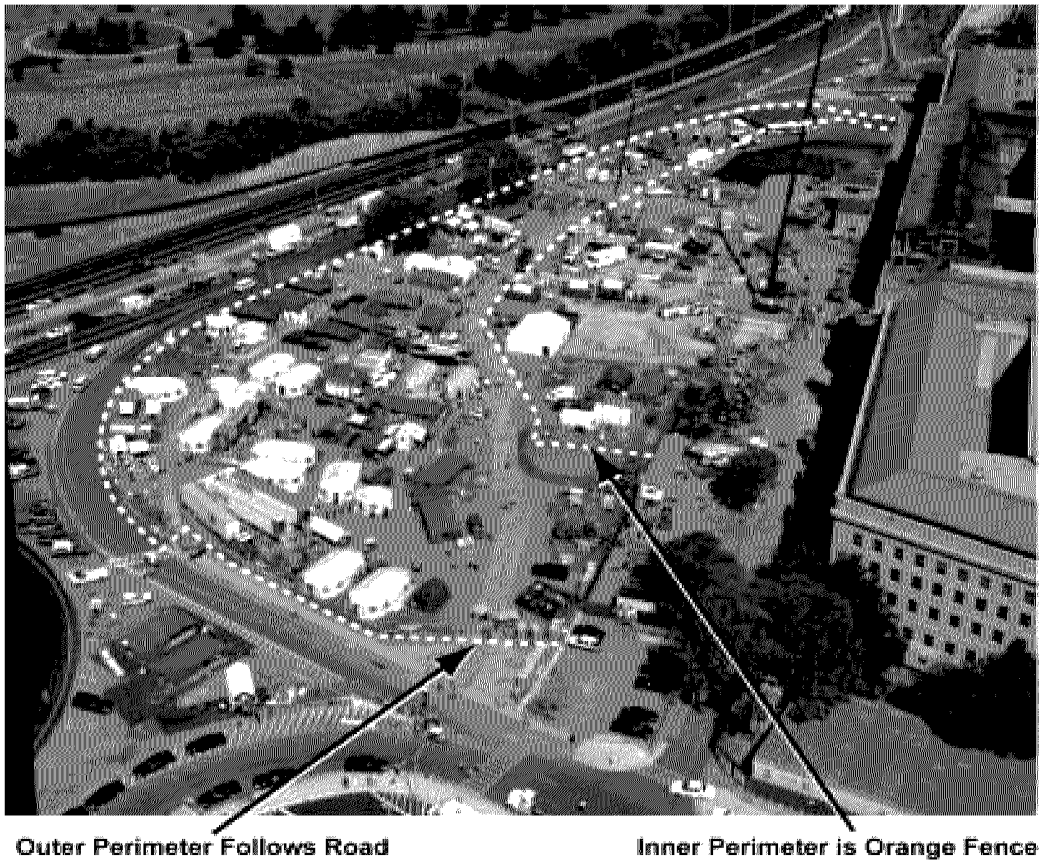


Figure C-5. Inner and outer perimeters.

After the ACFD relinquished control of the incident site to the FBI, questions arose concerning continuing support for the responders. The ACFD had provided the bulk of logistics supplies to all the response organizations beginning on September 11. The ACFD would subsequently be reimbursed by FEMA for the costs incurred. The FBI and other government organizations are not reimbursed for such costs. In this case, the ACFD left a logistics presence in place and continued supporting the FBI.

Pentagon renovation contractors Facchina and PENREN construction companies provided Bobcats®, front-end loaders, and other heavy equipment along with operators to the FBI. The BATF also provided equipment operators.

Heavy equipment.

Military personnel from the MDW were invaluable throughout evidence and body recovery operations. Not only were they available in large numbers and in highly disciplined formations, they were physically fit young infantrymen able to withstand the rigors of this challenging work.

The evidence and body recovery work was both physically and psychologically challenging. Working in the temporary morgue was particularly stressful. CISM support was available day and night. It proved both popular and valuable. Special Agent Bloesch made it clear that anyone working in the morgue could ask to be replaced at any time with no questions asked.

The FBI's temporary morgue and the North Parking Lot sifting operations attracted many visitors. Often, hosting visitors in sensitive areas is inappropriate, even when they are senior government officials.

There was no consensus regarding minimum required PPE during the criminal investigation phase. The FBI generally tried to comply with guidance and direction from the EPA, but some felt it was incompatible with the strenuous nature of the work when the threat of fire was minimal.

Some FBI responders felt, as time progressed and regulatory agencies such as the Occupational Safety and Health Administration (OSHA) were increasingly involved, they tended to apply standards more appropriate to an industrial operation rather than a crime scene.

Because two FBI overseas Rapid Deployment Teams are based in the Washington Metropolitan Area, the WFO had access to their cache of deployable equipment, which included Tyvek® suits, respirators, and other safety items.

Recommendations and Lessons Learned

The FBI needs to assess the realistic span of control and possibly adjust the number of senior leaders at large field offices. The WFO is the second largest in the Nation, with 657 agents and another 650 professional support staff. It is authorized a total of 1 ADIC, 3 SACs, 7 ASACs, and 56 SSAs. Only one ASAC was at the incident site beginning on the afternoon of the first day. A second ASAC, Doug Marshall, reported to the JOC for night shift beginning on the third day. The current ratio of supervisors to special agents may be adequate for traditional FBI investigative work; however, WMD incidents require more intense supervision. (LE-066)

The FBI WFO should initiate a program to train and exercise with area US&R teams and fire and rescue TRTs. FBI field offices in Memphis, TN, and Albuquerque, NM, where US&R teams are also located, should institute a similar program. (LE-067)

The WFO should host a roundtable discussion about the Pentagon response involving all participating law enforcement agencies. Such an event will help build on the bonds forged during the response and help reduce or preclude future misunderstandings. (LE-068)

An efficient system that can be readily implemented to produce incident site access badges needs to be developed to achieve control of the crime scene without impeding response operations. (LE-069)

In future WMD incidents, the transfer of logistics and other support functions concurrent with the end of fire and rescue operations should be planned early and carefully executed. (LE-070)

The WFO has a robust liaison program with the fire and rescue community. It should reach out in similar fashion to the MDW and DPS to strengthen those relationships as well. (LE-071)

CISM capabilities and the resources to deliver them need to be recognized in plans, understood by responders, and delivered both during the event and afterward in followup sessions. (LE-072)

Occasionally, it is appropriate for senior government officials to visit sensitive facilities such as the FBI's temporary morgue, even if only to check on the well-being of the staff working there. However, these visits must be carefully controlled and absolutely necessary. (LE-073)

The FBI WFO should conduct discussions with the EPA, OSHA, HHS, fire department, and other appropriate parties to better understand the levels of protection recommended under different circumstances. Based on these discussions, deployable caches of supplies and equipment can be acquired in the event that those belonging to the two Rapid Deployment Teams are unavailable. (LE-074)

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ANNEX D

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INTRODUCTION

> "Remember those who died and those who grieve their loss. Remember our flags, flying from the Pentagon, from the remains of the World Trade Center, and in front yards across America—for they symbolize the soul of a nation united. Remember who we are—take pride in who we are. We are Arlingtonians, and we are Americans—today, and for all days."
>
> Jay Fisette
> Chairman
> Arlington County Board

Arlington County has a full-service urban government, with its 3,400 employees providing comprehensive public services. In addition to fire, Emergency Medical Services (EMS), and police services discussed extensively in this report, Arlington County operates a water distribution system, sanitary sewer system and wastewater treatment plant, provides solid waste and recycling curbside collection, and is only one of two counties in Virginia to maintain its own roadways. It has the only comprehensive human services department in Virginia, operates 8 libraries, 13 community centers, maintains more than 1,100 acres of parks, and all the support services necessary for this urban center.

For Northern Virginia and much of the country, Arlington County is the gateway to the Nation's capital. Every highway and railway from Virginia into the District of Columbia passes through Arlington County. Ronald Reagan Washington National Airport is in Arlington County, which is also home to many Federal Government institutions including Fort Myer, Henderson Hall, the Defense Intelligence Agency (DIA), the Defense Information Systems Agency (DISA), and the Defense Advanced Research Projects Agency (DARPA). Tourists flock to Arlington County to visit the Iwo Jima Memorial and Arlington National Cemetery, and to tour the Pentagon. Planning for the safety and well-being of its citizens is a fundamental government responsibility everywhere and at all levels. Because of these special conditions, Arlington County's elected and appointed officials place substantial emphasis on emergency preparedness and management.

This annex describes how Arlington County's emergency management and Emergency Operations Center (EOC) functioned in the aftermath of the September 11 terrorist attack on the Pentagon. It is organized into a set of observations that describe the way Arlington County plans to manage emergencies. This is followed by a section of findings that reflect what participants reported actually occurred. Finally, there are 24 recommendations and lessons learned that are deduced from the findings.

Observations

Arlington County Code designates the County Manager, Mr. Ron Carlee, as the Director of Emergency Services. The Comprehensive Emergency Management

Plan (CEMP), first published in 1956 and frequently revised, serves as the basis for Arlington County emergency operations.

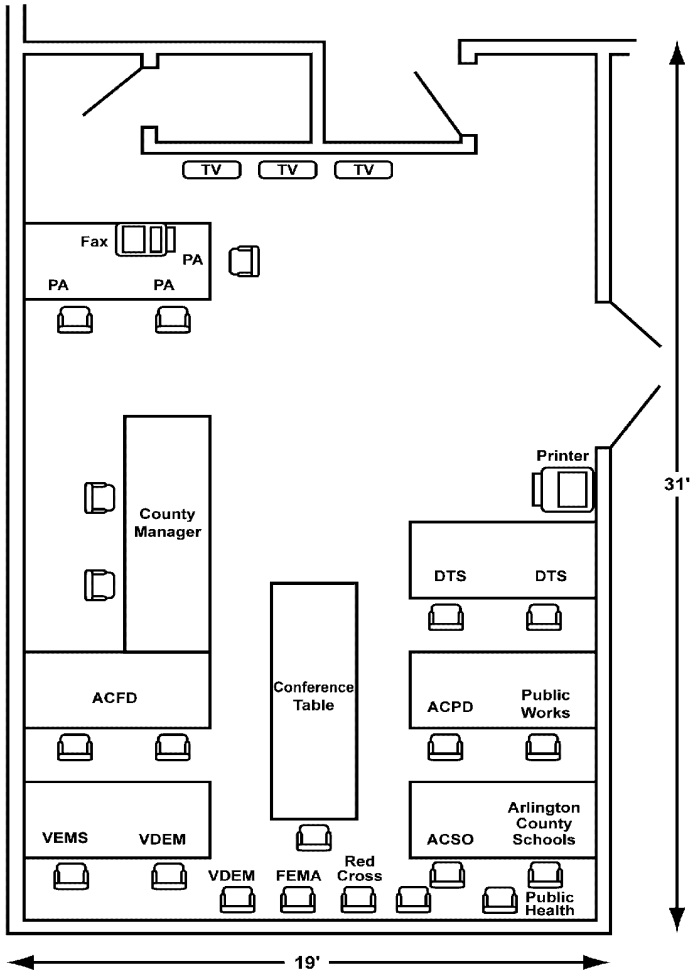
The CEMP establishes an Emergency Management Team, a group of senior managers knowledgeable in field operations who serve as an advisory body to the County Manager for all aspects of preparation, disaster response, and recovery. This core group is chaired by the Assistant County Manager (Mr. John Mausert-Mooney) and includes the Police Chief (Chief Edward Flynn), Fire Chief (Chief Edward Plaugher), Director of Public Works (Mr. Sam Kem), Arlington County Assistant Manager for Public Affairs (Mr. Richard Bridges), and the School Superintendent (Dr. Robert Smith). The Fire Chief is also appointed as the Arlington County Coordinator of Emergency Services. His designated Deputy Coordinator of Emergency Services (Captain Mark Penn) serves as the staff coordinator for the Emergency Management Team.

When an emergency occurs, the Emergency Management Team meets in the Emergency Operations Center (EOC) once it is activated. Communications, computing, and other Emergency Management Team equipment and supplies are stored in closets adjacent to the workspace, located on the ground floor of the Courthouse Square West Building at 1400 North Uhle Street. The Department of Technology Services (DTS) provides computer and telecommunications support to set up and operate the EOC. (See Figure D-1.)

The CEMP also establishes a standing Emergency Planning Team (EPT) chaired by the Director of Support Services (Mr. Henry Leavitt), with senior staff members from the police, fire, and public works departments and from public health, schools, environmental services, parks recreation and community resources, and technology services. The EPT is responsible for maintaining the CEMP, planning training for the Emergency Management Team and Emergency Task Groups (ETGs), and, during an emergency, anticipating and planning for future requirements. The Deputy Coordinator of Emergency Services, Captain Penn, is also the staff coordinator for the EPT.

Six ETGs are established by the CEMP with members from various county departments and offices, as well as outside agencies where appropriate. The ETGs have functional areas of responsibility, including Shelter and Evacuation, Employee Support, Recovery, Resource Management, Communications, and Traffic and Routing (T&R). A lead agency is responsible for each ETG.

The emergency operating provisions that were in place in Arlington County prior to September 11 were periodically tested and proved sufficient for managing past emergencies. However, those emergencies were of limited scope and duration, and most often weather-related. Arlington County had never played host to an emergency declared by the President of the United States, let alone one in response to a deadly overt terrorist attack. The attack on the Pentagon claimed the lives of 189 people. It also had an immediate and substantial economic impact on the county with the interruption of important transportation links, the closing of Ronald Reagan Washington National Airport and all its related retail enterprises, and the temporary cessation of tourist and business trade critical to the county's thriving hospitality industry.



ACFD = Arlington County Fire Department
ACPD = Arlington County Police Department
ACSO = Arlington County Sheriff's Office
DTS = Department of Technology Services
FEMA = Federal Emergency Management Agency
PA = Public Affairs
VDEM = Virginia Department of Emergency Management
VEMS = Commonwealth of Virginia Department of Health Office of Emergency Medical Services

Figure D-1. EOC floor plan.

In early September 2001, Captain Penn, a 27-year veteran of the Arlington County Fire Department (ACFD) and the son of a former Alexandria Fire Chief, was placed on medical light duty. He surrendered his command position and, on September 10, assumed his new duties as Deputy Coordinator of Emergency Services. The next morning, in the office of Assistant Chief John White, Captain Penn watched televised reports of the World Trade Center terrorist attacks unfold. While heading back toward his office at Fire Station 4 on Hudson Street, he heard Captain Steve McCoy's radio report of a commercial airliner crashing near the 14th Street Bridge, the result of a possible terrorist attack. Captain

Penn decided to divert directly to the EOC to carry out the duties of his new, "less stressful" position.

County Manager Carlee was addressing a leadership conference attended by approximately 100 county managers and supervisors early on the morning of September 11. He had completed his remarks and communicated with the Arlington County Emergency Communications Center (ECC) regarding the World Trade Center when news of the Pentagon attack was broadcast. Public safety personnel attending the conference immediately departed, heading toward the Pentagon. County Manager Carlee accompanied EMS Battalion Chief Ray Blankenship but diverted directly to the county's EOC to lead the emergency operations.

As is the case with most geographically small jurisdictions, the facility designated as Arlington County's EOC is used during daily business operations as a conference room. Lead Emergency Management Team agencies maintain critical supplies, information files, and laptop computers in containers stored in adjacent closet space.

Captain Penn arrived at the EOC at about 9:40 a.m. and discovered that the room was already open. Mr. Dave Alberts and Ms. Patricia Nye from the Office of Support Services (OSS) were setting up tables and arranging furniture as staff from the DTS connected telephones and cables for television monitors and computers. At the time of the Pentagon attack, the laptop computers had been temporarily assigned to support a countywide capital improvement task force working in the same building. They were quickly recovered and installed for their primary functions.

The EOC was officially activated based on a directive from Mr. John Mausert-Mooney via page to EOC members at 9:48 a.m. County Manager Carlee arrived at 10:00 a.m. and began assessing the status of events and personnel resources. He ensured out-of-town personnel were recalled and began consultations with the County Board.

Ms. Cindi Causey, Regional Director of the Virginia Department of Emergency Management (VDEM), arrived at the EOC at about 10:15 a.m. and proved to be a highly valuable resource, particularly since it was Captain Penn's first day as Deputy Coordinator of Emergency Services. During County Manager Carlee's preliminary situation assessment, she suggested that the county consider declaring a state of emergency, which was signed by County Manager Carlee at 11:39 a.m. and subsequently confirmed by the County Board. Prior to the 2:00 p.m. Emergency Management Team meeting, it was received by the State, and Governor James Gilmore had also issued a declaration of a state of emergency in Arlington County. A Presidential Emergency Declaration was signed on the morning of September 13.

As part of the Washington Council of Governments, a conference call was scheduled for 6:00 p.m. on Tuesday night for all the Chief Administrative Officers (CAOs) in the region, who meet monthly as an ongoing committee of the Council of Governments structure. The CAO conference was not part of an existing

emergency plan except for snow emergencies. The September 11 call was organized on an ad-hoc basis by the Chair of the CAO's committee, Anthony Griffin, County Executive of Fairfax County. In this conference call, which County Manager Carlee took on his cellular telephone at the Police Command Post at the Pentagon, the CAOs shared information from the day. The CAOs quickly came to the conclusion that all local governments should have a unified message for operations the next day. Two school systems had already declared they would be closed on September 12; consequently, to the disappointment of some school superintendents who were included in the call, it was agreed all school systems would be closed. None of the area local governments had declared closings and there was a strong sense among the CAOs that local governments should be open; however, it was not known what President Bush would say later that night. Thus, a preliminary plan was reached pending a subsequent call after the President addressed the Nation. The subsequent call, at 9:30 p.m., confirmed the group's earlier intention to keep area governments open.

Since September 11, to facilitate communications, the regional CAOs have implemented a new pager notification and conferencing system that can be activated by any CAO and result in a conference call in as little as 30 minutes.

Findings

Arlington County Manager Carlee performed in extraordinary fashion in his capacity as Director of Emergency Services. He and Emergency Management Team members did not interfere with site operational matters, however, they actively and energetically directed the county's overall response. County personnel from all agencies were deployed to support emerging operations as circumstances dictated.

County Manager Carlee conducts status review.

The County Board's role in a disaster is not operational. It is responsible for providing oversight and accountability of its professional administrators and, based on its knowledge, reassuring the public. The County Board also plays a critical role in intergovernment relations when resources and coordination are needed beyond normal mutual-aid agreements. Beyond the immediacy of a disaster, the County Board is responsible for policy review and development. On September 11, County Board members reported to their county government offices to be available for consultation. County Board Chairman Jay Fisette began receiving regular briefings from County Manager Carlee. At 3:30 p.m., the County Board formally convened to receive a briefing from County Manager Carlee and ratify the emergency declaration he had issued earlier in the day. Chairman Fisette also led a public briefing that was shown over the county cable television system. County Manager Carlee, Chief Plaugher, and Chief Flynn participated in this first formal communication to the Arlington public. Chairman Fisette was regularly briefed by County Manager Carlee, with voicemail updates sent to all County Board members. A formal meeting of the County Board occurred on September 22. Chairman Fisette also frequently appeared before the national media near the Pentagon and met with visiting dignitaries who came to observe the Pentagon response activities.

Responding to allegations of anti-Muslim and anti-Middle Eastern activities in other communities, the County Board organized a forum on tolerance that was conducted on September 24. Also cablecast to the Arlington community, Chairman Fisette led a panel discussion involving nine distinguished citizens, promoting understanding and tolerance. As a diverse community with people from virtually every culture, this panel presentation was important in reinforcing the community's values during the crisis. The 90-minute tape was repeatedly broadcast on Arlington Channel 31 between October 2 and December 31, 2001.

The County Board's role became more critical regarding the closure of Ronald Reagan Washington National Airport. Although closed initially for security reasons, like all airports in the United States, it was not permitted to reopen on September 13 when the others did. Chairman Fisette took the lead in creating a coalition among Washington Metropolitan Area governments, partnering with Virginia's Governor and its congressional delegation to reopen the airport.

Finally, the County Board organized the Arlington Day of remembrance and appreciation on October 7. The event drew several thousand residents to remember those who died and to applaud the efforts of all those individuals, organizations, and communities that joined together in response and recovery efforts.

Arlington County Appreciation Day.

The Arlington County EOC performs several critical emergency support functions. It is the focal point of all county-directed resource support for field operations and coordination among responding parties. At the EOC, Arlington County officials continuously assess the impact of the event on the community and implement mitigating actions as appropriate. They also communicate information to the County Board and the public.

During the response to the September 11 terrorist attack on the Pentagon, the EOC operations proved to be flexible and effective. Representatives from important organizations, including the VDEM, Federal Emergency Management Agency (FEMA), and American Red Cross were able to confer face-to-face with each other and with Arlington County officials from all key government agencies. County Manager Carlee held regularly scheduled meetings to share status information, assess support needs and the resources available to meet them, project future requirements, and establish a time for the next meeting. At the beginning of each day, objectives were set to guide the work efforts of the Emergency Management Team and supporting staff and agencies. (See Figure D-2.)

The atmosphere throughout EOC operations was one of camaraderie and a shared sense of purpose. No ego trips, game-playing, or power grabs occurred. Everyone pitched in to help wherever help was needed, regardless of position or rank. Despite the severity of the incident and urgency of the initial response, an air of patience and calm prevailed.

While the Arlington County Government can be justifiably proud of its role in support of the first responders and citizens, this event also provided an opportunity to discover areas that need improvement.

ARLINGTON COUNTY
EMERGENCY OPERATIONS CENTER

September 17, 2001

OBJECTIVES FOR DAY 7

1. Continue to provide support for field operations with supplies, resources, and personal support.
2. Continue development of family support system.
3. Reinforce interagency relationships.
4. Continue development of community events.
5. Work with Congressman Jim Moran on short- and long-term policy and funding issues.
6. Strengthen long-term public information capacity.
7. Develop support strategy for business community.
8. Develop ongoing operations plan for OAR, CC, and OSS.
9. Develop county short- and long-term security plans.

Figure D-2. Objectives for Day 7.

Transactions between the ACFD Incident Command System (ICS) and the Arlington County EOC Emergency Management Team required some effort. This role is one familiar to all ACFD participants. By the nature of their profession, firefighters understand emergency operations. For the Arlington County Emergency Management Team, the ICS is less familiar territory. It takes time to fuse these two essential management activities so they function effectively and efficiently. Part of the difficulty is that the emergency management structure defined in the CEMP bears no relationship to the ICS structure in place at the incident site. Incident Command Post (ICP) staff cannot pick up a telephone and call a direct counterpart at the EOC. For example, the ICS Logistics Section does not have a counterpart at the EOC. Depending on the nature of logistics support required, the Incident Command Logistics staff may need to contact any of several EOC representatives or ETGs.

The space designated for the EOC is inadequate to serve as a management facility for an emergency of the scope and magnitude of the Pentagon attack, or another situation of similar breadth and duration. It was overcrowded and uncomfortable. It does not have adequate and appropriate space for meals and food storage. There are no provisions for private meetings. There is not sufficient room for core Emergency Management Team members, press and VIP briefings, county leadership meetings, and adjoining areas for the ETGs. Arlington County does not have a full-time, well-designed and equipped EOC.

The last full activation of the EOC was in preparation for the anticipated problems associated with the arrival of the year 2000 (Y2K). As a result, although many county officials had EOC identification (ID) badges, they had long since expired. A current ID system was not in place.

Although the Emergency Management Team and other staff members were paged, many had already left their offices in a nearby building and reported to the EOC on their own initiative. However, outside agencies should have been

contacted immediately. For example, the Arlington County Chapter of the American Red Cross is a member of the Shelter and Evacuation ETG. They are also part of the ACFD pager network. As events at the Pentagon were reported on television, Ms. Susan Aahrus, the Chapter Chief Operating Officer, repeatedly called the ECC and asked if American Red Cross assistance was needed. The American Red Cross was asked to supply cots for a planned shelter at the Thomas Jefferson Community Center, but was not otherwise engaged until its national headquarters instructed the Arlington chapter at midday that the Department of Defense (DoD) wanted on-site support. They initially responded with two Disaster Action Teams, consisting of two American Red Cross vans, 12 volunteers, and canteen supplies, such as refreshments and sundries. In the succeeding weeks, the American Red Cross provided nearly 1,500 volunteers at the Pentagon and at area hotels where relatives of victims were located. (See Annex A – Fire Department Operations, Section 6, Logistics).

Computing and communications technology to support the EOC is also seriously deficient. Information sharing, collaboration, and coordination almost exclusively depend on face-to-face interaction. The EOC is equipped with laptop computers and associated peripherals, as well as telephones and televisions used to monitor news and weather. It does not have any installed radio communications. Without an installed radio capacity, the Incident Commander can only communicate with the EOC through its staff members, some of whom are issued portable radios. A more reliable contact with field response forces is needed. The telephone system was also inadequate. Numbers would ring busy with no rollover.

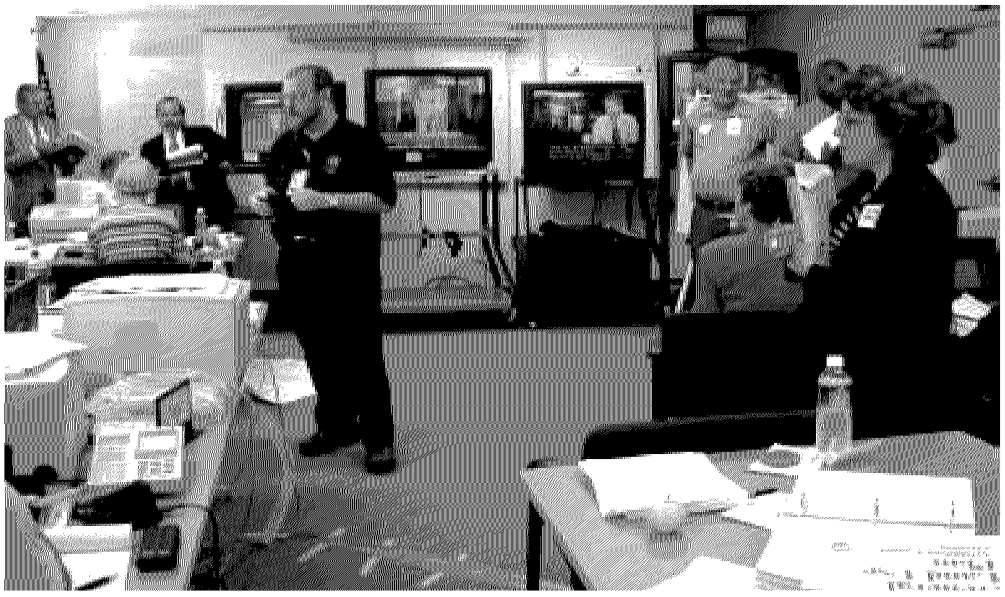
At about 12:00 noon on September 11, County Manager Carlee directed the Arlington County Sheriff's Office (ACSO) to secure the county headquarters building. Sheriff's deputies were posted at the entrance with instructions to prevent public entry. This caused some confusion, as county employees returning from lunch were not allowed into the building. At the time, employees did not carry Arlington County identity badges. This left some departments short-handed.

Ms. Meg Falk from the Office of the Assistant Secretary of Defense for Military Community and Family Affairs called Assistant County Manager Mausert-Mooney seeking help in finding a location to establish a Family Assistance Center. DoD required 200 to 300 parking spaces, computers, 30 telephone lines, rooms for individual counseling and a large meeting room that would accommodate at least 200 people. Working with Mr. Terry Holzheimer and other members of the Department of Economic Development staff, space was acquired at the Crystal City Sheraton Hotel.

At 3:15 a.m. on September 12, the Incident Commander telephoned Assistant County Manager Mausert-Mooney who was filling in for County Manager Carlee at the EOC. Chief Schwartz reported that the Urban Search & Rescue (US&R) teams wanted authorization to use a wrecking ball commencing at daybreak to demolish the structurally damaged sections of the Pentagon. This would speed search and rescue efforts, safeguard the safety of the responders, and would not

result in additional deaths of victims since the initial impact, fire, smoke, and earlier collapse had killed all occupants not already rescued. Of course, no one could guarantee there were no trapped victims who could be killed as a result of the demolition. Assistant County Manager Mausert-Mooney agreed with Chief Schwartz recommendation to allow the demolition, but only with assurances that all possible life-detection activities had been taken, and that General Jackson, Chief Plaugher, and the FBI On-Scene Commander concur. Within an hour, Chief Schwartz called back and stated all of those conditions had been satisfied. Assistant County Manager Mausert-Mooney called County Manager Carlee at home and he also concurred with the decision. Ultimately, the US&R teams chose not to use this approach.

Unlike the Emergency Management Team, the ETGs do not have prearranged workspace. When activated, each lead agency must identify suitable workspace and assemble the task group members, who bring with them all necessary equipment and supplies. There are no communications mechanisms or protocols among the various ETGs and between them and the EOC. The primary forum for information exchange is the series of meetings called by County Manager Carlee. These took place at 12:45 p.m., 2:00 p.m., 3:30 p.m., and 7:30 p.m. on September 11. On subsequent days, a schedule was set each morning based on the status of operations.

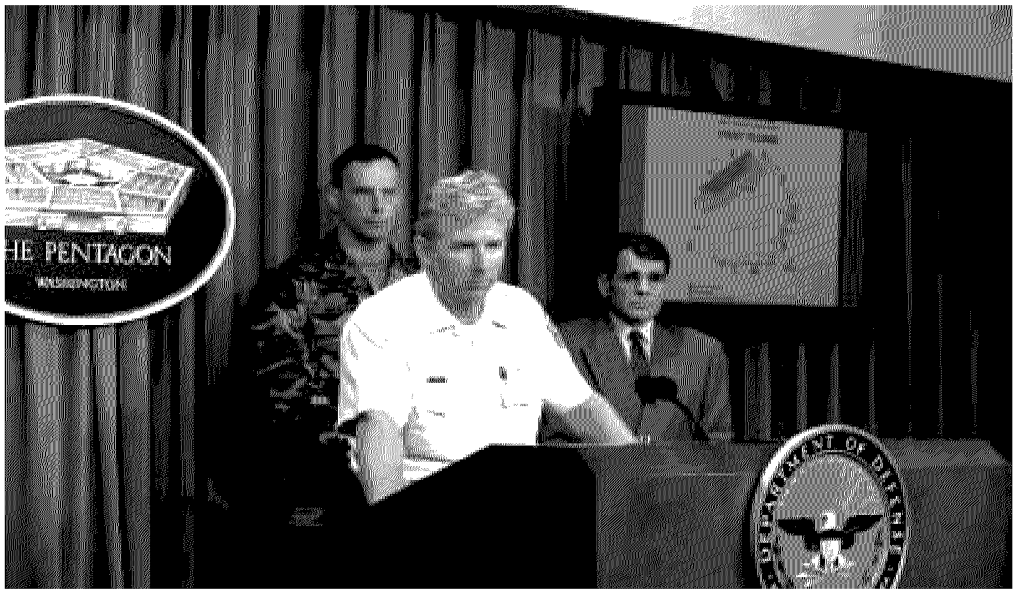


County Manager Carlee holding Emergency Management Team meeting.

Library Director Ann Friedman leads the Communications ETG. This unusual relationship is based on the unique structure in Arlington, where the library has broad-based responsibility for providing information to the public, including managing the county's Web site and government access cable television channel.

The Communications ETG works closely with Assistant Manager Bridges, who is an Emergency Management Team member and works at the EOC.

International news press flocked to the Pentagon, taking over a gasoline station with a clear view of the attack site. Though this was an international story about an attack on a Federal facility, the Federal Government did not step forward to handle the growing media presence, nor was there Federal support to establish a Joint Information Center (JIC). Thus, it fell to Arlington County to manage the international press while trying to communicate with its own population. Mr. Bridges took the lead on the former through regularly scheduled press briefings and Ms. Friedman took the lead on the latter. The Arlington efforts with the international media filled a critical gap and improved the coordination and quality of international news coverage.



Chief Schwartz answers questions during a joint press conference on September 14.

Communications with Arlington's public is a significant challenge under normal circumstances and was even more challenging during the events of September 11. Outside the Washington Metropolitan Area, Arlington would be a major city in its own right. It would have one or more television stations and a daily newspaper. As a relatively small jurisdiction in a very large metropolitan area, Arlington receives modest press coverage compared with much larger, and frequently more controversial, jurisdictions. Adding to the challenge on September 11, many people outside Arlington were not even aware the Pentagon and Ronald Reagan Washington National Airport are in Arlington County rather than Washington, DC. High-profile politicians throughout the region rushed to be interviewed by the media, leaving Arlingtonians with a dearth of information about the local situation.

Meeting the information needs of Arlington County residents required creative solutions. The Arlington County Web site was converted to a virtual newspaper with a special section covering information about the emergency. Much of the same information was transcribed and scrolled on the county cable television channel, which also broadcast information about related services available to Arlingtonians. The telephone information line was transformed into a 24-hour service, and a new 24-hour mental health hotline was established. Communications channels with Arlington businesses were established through the economic development office. Efforts to communicate with Arlingtonians were creative and reasonably successful; however, they were ad hoc and not as timely as they could have been.

Additionally, there was a need for the EOC and the ICP to keep abreast of events around the country and around the world. Arlington County was intensely focused on its immediate response needs and did not have a system to monitor external events that might impact the Arlington effort.

Another challenge that fell to the Communications ETG was that of managing volunteers and donations. This is an element not addressed in Arlington's CEMP. County officials were unprepared for the outpouring of support from around the country and the generosity of its citizens. People wanted to help in any way possible. With hundreds of calls on Arlington's information telephone line, there was no plan in place to manage these offers of help. An ad-hoc database was developed to collect information about people with specific skills or who wished to donate funds or materials and supplies; however, many people simply wanted to support their firefighters, emergency medical technicians, and police officers. With no other way to channel their energies, many prepared homemade meals and treats, which they delivered to the nearest public safety facility or incident site. These items cause a dilemma since they can neither be refused nor consumed. It is important to convey to the public that packaged food is the most helpful and safest contribution in an emergency.

It is also important to offer creative channels to engage the public. Late in the emergency, Arlingtonians were invited to local recreation centers to discuss their experiences and prepare expressions of support for rescue workers and victims. A similar activity was critically needed, but not recognized, in the first 48 hours of the event. People want to give and be part of the relief effort and meaningful opportunities must be made available to them.

The Shelter and Evacuation ETG made plans to establish the Thomas Jefferson Community Center as a shelter for up to 1,000 persons, including stranded travelers, county employees, and US&R teams deployed into the county. By evening, arrangements had been made to feed and shelter up to 300 people at Thomas Jefferson Community Center; however, the requirement did not materialize and it was closed the next morning.

The T&R ETG was challenged from the beginning. Arlington County police were wholly absorbed in traffic direction and control. They had neither the time nor the means to share real time information with county traffic engineers. Initially, there was no police or sheriff's department representative at the T&R ETG. In

the absence of strategically positioned closed circuit television traffic monitors, the T&R ETG sent engineers out into the streets to observe and collect information.

Coordination of public transportation was also challenging. The flow of traffic was disrupted on I-395, Route 110, and Washington Boulevard. The Pentagon attack coincided with the morning driver shift change. The closing of Federal Government agencies on September 11 was not coordinated with neighboring jurisdictions and all appropriate transportation authorities, including the Virginia Department of Transportation (VDOT), Washington Metropolitan Area Transit Authority (WMATA), and District of Columbia. On the morning of September 12, high occupancy vehicle (HOV) exits on I-395 in Arlington County were closed, requiring bus drivers to proceed into the District of Columbia and turn around. With Ronald Reagan Washington National Airport closed, area hotels were filled with stranded travelers who needed transportation to Washington Dulles International Airport or Baltimore Washington International (BWI) Airport. The Pentagon bus and metro stops were also closed. The Pentagon normally serves as the major bus transfer point for all of Northern Virginia. By September 12, the county had established an alternative Pentagon bus facility in Pentagon City and an Arlington-Dulles shuttle was put in place.

Pentagon traffic congestion.

The Resource Management ETG is responsible for acquiring supplies, equipment, and other materials to support county emergency operations. This was a critical function and one that was performed exceptionally, although many obstacles were encountered. County procurement agents are not generally familiar with the technical specifications of firefighting equipment and supplies. To assist them, the ACFD assigned a firefighter to Resource Management to provide

"technical advice." This ad-hoc adjustment should be formally incorporated into the CEMP.

For the first 3 days, the Resource Management ETG operated without computers. Automated data records would have been particularly helpful in reconstructing the procurement process for subsequent reimbursement. Additionally, Internet access would have enhanced the search for suppliers.

The Resource Management ETG accepts and expeditiously processes legitimate requests from any county organization or staff element engaged in emergency operations. However, in this instance, the Incident Commander established a Logistics Section to which all support requests were to be submitted before going forward to the Resource Management ETG. Because the ACFD does not usually have a centralized supply function, it took awhile to establish the proper flow for procurement transactions. About 100 procurement requests were sent directly to the Resource Management ETG without review by Logistics Section staff. As a result, there were no on-site order records, making accountability difficult. Vendors arrived with supplies the Logistics Section was not expecting. In a similar vein, the Resource Management staff was not always notified when deliveries were completed so transactions could be properly closed out.

Chief Plaugher discussing Pentagon logistics requirements.

Because of the strict security requirements, all deliveries to the incident site had to be screened by the ACPD and Defense Protective Service (DPS) to ensure there was no "Trojan Horse" and to confirm the order. By the third day, procedures were developed in coordination with the Resource Management ETG and the EOC. Each delivery was sent to the Pentagon receiving dock for inspection by the DPS. It would probably have been helpful if this process

occurred away from the incident site, possibly at the Arlington County Trade Center warehouse.

Members of the Resource Management ETG worked tirelessly to meet the critical needs of the response force. They purchased more than 70,000 board feet of lumber for shoring operations and spent nearly $200,000 on special protection equipment for the Technical Rescue Team (TRT) members engaged in those operations. There were 4,250 Tyvek® suits purchased for the responders and more than $30,000 was spent on respirators. Arlington County spent nearly $60,000 to rent and service 62 portable toilets, in addition to those already onsite and rented by other organizations. Refueling operations managed by Arlington County onsite consumed 16,000 gallons of gasoline and diesel fuel in the first 10 days.

Many vendors assisted in the procurement of the needed materials and supplies. Home Depot sent a senior manager to the Resource Management ETG location and to the logistics area at the incident site. Many vendors provided extraordinary support to the Resource Management ETG including United Rentals, Long Fence, Safeco, Sunbelt Rental, Don's Johns, Maryland Fire Equipment Company, and several others.

Arlington County Procurement Officer George Barak worked tirelessly as a member of the Resource Management ETG. On one Saturday, his wife accompanied him to the EOC and together they staffed the Resource Management ETG function. During this period, Mr. Barak celebrated the 20th anniversary of his immigration to the United States. He commented to County Manager Carlee that he hoped his work during the response "at least partially repaid" all he had received from America.

The Recovery ETG was activated on September 12. Its initial task was to work with the FEMA Disaster Field Office, which would occupy some 20,000 square feet of rented office space to complete its work during the weeks immediately following the attack. The Recovery ETG would guide county efforts to document all the costs associated with the emergency response and recovery. Since the declarations covered Arlington County only, the county served as the "applicant" for reimbursement purposes, and the Recovery ETG coordinated numerous briefings of those in neighboring jurisdictions who were responsible for collecting cost information for their public safety and other employees who provided support in the response. Fortuitously, members of the Recovery ETG had recently attended a "Disaster Cost Capture" class conducted by the VDEM Public Assistance Office.

The Recovery ETG was also responsible for assessing the economic impact of the emergency, which, in this case, was particularly substantial. The decision to delay indefinitely the reopening of Ronald Reagan Washington National Airport had a significant impact on the regional and local economy. The airport averaged 42,000 passengers a day, annually generating $5.7 billion in direct and indirect business. Nearly 17,000 persons were employed at the airport at the time of the attack, and another 70,000 workers in the hospitality and tourism industries rely on it. To respond to the business community's need for

information and support, the county and the Chamber of Commerce created a business recovery center. Businesses were called and received broadcast e-mails with information on changes in traffic patterns, airport and airline information, mental health assistance for employees, central point for donations and volunteers, and school information. Department of Economic Development staff coordinated information on tax relief and employment assistance, and worked closely with the Small Business Development Center at George Mason University and the Virginia Employment Commission.

To respond to the growing needs of secondary victims, a coalition of Arlington nonprofit groups, the Coalition of Arlington Agencies for Response and Recovery (CAAR) came together under the umbrella of the Arlington United Way and the Arlington Community Foundation. Initially, these service providers saw the purpose of the group as one of information sharing. They soon realized they would be providing assistance—financial, crisis counseling, and information—for some time. The Recovery ETG has participated in this effort since its inception, and is continuing to work with the group to launch a community-based recovery task force, which is consistent with the model promoted by the State.

The Recovery ETG was not activated early enough in the response and, therefore, could not ensure all material and labor costs were accurately captured. Its role also needs to be broadened to reflect additional responsibilities including economic impact analysis, coordination of cost recovery efforts, liaison to community-based groups such as CAAR, and possibly management of donations.

The Employee Support ETG was immediately activated with initial emphasis on providing critical incident stress management (CISM) support to first responders. Ms. Dodie Gill, Director of Employee Support, and members of the county Employee Assistance Program (EAP) staff were at the incident site within 3 hours of the attack. The EAP function is staffed with Arlington County school system employees. The support provided onsite proved extremely valuable and was greatly appreciated by first responders. This support included contracted chiropractic services and seated therapeutic massages, individual counseling, assistance in contacting family members, and help managing personal affairs.

As time progressed, support was extended to other employee groups and family members. A special day-long program was organized for the Arlington County Police Department (ACPD) and families of Arlington County police officers. Babysitting services were provided, individual and group counseling was offered, and bus tours of the incident site were conducted. Group briefings were also presented to employees of the school system, and programs were developed to help students and their families cope with this event.

The Employee Support ETG coordinated broadcast voicemail messages to provide information to all county employees. These messages were well-received but should have been initiated earlier in the event and transmitted more frequently.

Because of concerns about foodborne illnesses, environmental health inspectors from the Arlington County Environmental Health Bureau inspected donated food

items at the incident site. This requirement is not currently recognized in the CEMP.

Several Arlington County offices and departments were challenged to find adequate numbers of qualified staff to function effectively around the clock for several days. There were plenty of people willing to work. The issue was planning for the long term and providing adequate training and orientation for relief personnel. These same organizations had to support emergency operations while day-to-day county business continued largely without pause. In several instances, normal business functions were also taxed, such as the sudden increase in employment assistance driven by the collateral effects of the Pentagon attack.

Recommendations and Lessons Learned

Many of the difficulties encountered by Arlington County government can be resolved by constructing and equipping a modern EOC. It should be of sufficient size and design to concurrently support the various activities that comprise the emergency management function. Centralized core workspace should be set aside for the Emergency Management Team and related staff. Contiguous work areas should be available for the ETGs where appropriate and for other ad-hoc work groups. A formal executive briefing room should be incorporated into the EOC design. The Arlington County ECC should be an integral part of the EOC, and a core staff should maintain and operate the EOC on a full-time basis. (EM-001)

A new EOC should be electronically equipped with communications and computing devices that are fully integrated. Emergency management software packages are available from several vendors that support the full spectrum of EOC functions, including rostering, automated notification, operations checklists and journals, action tracking, and report generation. Consideration should be given to Web-based systems that do not require buying "seat-licenses." Information from the EOC would then be accessible to anyone on the Local Area Network or with a dial-up connection. This will allow the county leadership to access the information from their offices, homes, or other locations if they are traveling. Such systems can be customized so appropriate information is available to the press, neighboring jurisdictions, and other government agencies. (EM-002)

The county should explore more effective use of targeted e-mail, reverse 9-1-1, and emerging technologies to transmit critical information to its own residents and businesses. (EM-003)

Policies must be established early and clearly communicated regarding both emergency and routine county operations. Such policies should specify what county employees are required to staff continuing functions and the hours of operations. They should provide for effective 24-hour staffing of the EOC Emergency Management Team "chairs" as well as the EPT and ETGs. (EM-004)

An EOC ID system should be established to ensure key officials and support staff have current ID badges. (EM-005)

To facilitate communications and coordination, an EOC representative should attend the Incident Command/Unified Command team and Incident Command staff changeover meetings. (EM-006)

Closed circuit television cameras should be installed at strategic locations throughout the county so traffic flow can be monitored from the EOC. (EM-007)

The work of the Employee Support ETG and EAP staff must be closely coordinated to ensure efforts are not duplicated and services provided to county employees are comprehensive. (EM-008)

An EOC equipment inventory should be maintained and records of any equipment loaned to other government entities kept so they can be quickly recovered. (EM-009)

Emergency contact lists must be updated and should include all supporting organizations, even those that are not part of the county government. (EM-010)

Arlington should consider an amendment to its CEMP to develop explicit plans for the receipt, tracking, and management of donations and volunteers. (EM-011)

Arlington County should review its current emergency management structure. It is possible that a different structure can better support a protracted ICS response operation. One of the most common EOC organizational schemes is the National Interagency Incident Management System (NIIMS) ICS, which allows seamless integration between the EOC and the field ICS. Another popular model is based on FEMA Emergency Support Functions (ESFs). This model is best suited when the primary role of the EOC is to provide resource support to the field ICS. (EM-012)

A more comprehensive, tested communications plan should be developed. The public needs to know in advance of an emergency where it can get Arlington-specific information. Strategies employed on an ad-hoc basis during September 11 should be further developed, formalized, tested, and communicated to the public. This includes the conversion of the county's Web site to an emergency information system with a staffing plan to support it; the more extensive use of the cable channel in emergency mode; and a systematic approach for communicating quickly with the Arlington business community. (EM-013)

Arlington County should consider establishing, away from the incident site, a pre-delivery screening location for supplies and equipment. (EM-014)

The CEMP should be revised to provide technical representation at the Resource Management ETG to aid in the procurement of special equipment to support fire, rescue, and law enforcement agencies. (EM-015)

The CEMP should include provisions for establishing a central receiving and inspection point for all donated items. (EM-016)

The Recovery ETG needs to be activated early in the response to ensure all material and labor costs are accurately captured. Its role needs to be broadened to reflect additional responsibilities including economic impact analysis, coordination of cost recovery efforts, liaison to community-based groups such as CAAR, and possibly management of donations. (EM-017)

The ACSO is not normally assigned space in the EOC but performed many valuable functions by its addition to the EOC during this incident. Workspace should be set aside for a Sheriff's Office representative to perform required duties consistent with the CEMP. (EM-018)

Support from the Arlington County American Red Cross Chapter extended well beyond the work of the Shelter and Evacuation ETG. Most of their activity was providing logistical support to the response force. As a result of September 11, the number of trained volunteers has grown from 80 to more than 300. Assigned space in the EOC would enable the county to make even better use of American Red Cross resources. (EM-019)

Regular emergency management training and cross-training should be mandated for managers and senior staff members. Key personnel should be familiar with the mechanisms for declaring a state of emergency, activating the Emergency Alert System (EAS), properly and accurately documenting operating costs, and all the other details associated with effective emergency operations. (EM-020)

Arlington County should determine key disciplines and specific skills needed in an emergency and participate with neighboring jurisdictions in a mutual-aid system, including media affairs and procurement. This would help ensure appropriate staffing for an extended event such as the Pentagon response. (EM-021)

The emergency preparedness levels specified in the CEMP should be revised so they are compatible with those recently published in Homeland Security Presidential Directive - 3, March 11, 2002. The new preparedness levels should include specific actions automatically taken at each level. (EM-022)

The CEMP should be revised to clearly define the roles of elected officials, including County Board members, during an emergency. Such an initiative should reflect the proper roles of elected officials and appointed management staff. Tabletop exercises focusing on scenario-driven policy issues might be incorporated into county emergency exercises so County Board members are better informed and can be more proactively engaged in the emergency management process. (EM-023)

Disaster response plans should include provisions for comprehensive CISM support for responders, their families, and members of the affected community. Other jurisdictions throughout the country should consider using an EAP similar to that used in Arlington County. (EM-024)

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APPENDICES

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APPENDIX 1
24-HOUR TIMELINE

September 11

8:10 a.m.	American Airlines Flight #77 departs Washington Dulles International Airport
9:20 a.m.	FBI WFO is notified that American Airlines Flight #77 has been hijacked
9:38 a.m.	American Airlines Flight #77, carrying 58 passengers and a crew of 6, crashes into the Pentagon
9:40 a.m.	Captain Chuck Gibbs arrives at the Pentagon
9:40 a.m.	Captain Mark Penn arrives at Arlington County EOC
9:41 a.m.	Battalion Chief Bob Cornwell arrives at the Pentagon and assumes Incident Command
9:41 a.m.	ACFD Truck 105 arrives at the Pentagon
9:42 a.m.	ACFD Captain Edward Blunt arrives at the Pentagon and establishes EMS Control
9:43 a.m.	MWAA first responders arrive at the Pentagon
9:48 a.m.	Assistant Chief James Schwartz arrives and assumes Incident Command
9:49 a.m.	FBI Special Agent Chris Combs arrives and is FBI representative to Incident Command
9:50 a.m.	Chief Schwartz establishes Fire Suppression Branch, River Division, EMS Division, and A-E Division
9:50 a.m.	Three area hospitals are prepared to receive patients
9:55 a.m.	Assistant Chief John White arrives and is assigned EMS Branch Commander
9:55 a.m.	Captain Gibbs evacuates impact area
9:57 a.m.	Structural collapse in impact area
10:15 a.m.	Chief Schwartz orders full evacuation because of warning of approaching hijacked aircraft
10:25 a.m.	Seriously injured victims are evacuated by EMS units and Medivac helicopters
10:30 a.m.	Arlington County EOC is operational
10:37 a.m.	United Airlines Flight #93 crashes 80 miles south of Pittsburgh, PA

10:38 a.m.	Chief Schwartz sounds the all-clear, ending the evacuation
11:30 a.m.	Chief Schwartz establishes the ICS Operations Section at the Pentagon Heliport; Battalion Chief Randy Gray is Operations Chief
11:39 a.m.	Arlington County issues emergency declaration; ratified by County Board at 3:30 p.m.
12:30 p.m.	County Manager Ron Carlee holds first Emergency Management Team meeting at the EOC
1:00 p.m.	Loudoun Task Force, led by Chief Jack Brown, arrives at Fire Station 1
1:10 p.m.	Chief Schwartz assigns Chief Brown as head of Plans Section
1:15 p.m.	Chief Schwartz asks DPS Chief John Jester to arrange Pentagon space for a multiagency meeting at 6:00 p.m.
1:30 p.m.	Chief Schwartz directs Chief White to establish a Logistics Section
2:00 p.m.	Fairfax US&R Team arrives
2:00 p.m.	Second threat of unidentified aircraft causes full evacuation
6:30 p.m.	Agency representatives meet with Chief Schwartz to discuss ICS and phasing into a Unified Command team
7:00 p.m.	Conference call among regional county administrative officers determines school and county openings for September 12
8:00 p.m.	FBI announces that the JOC will be activated at Fort Myer at midnight
11:00 p.m.	Chief Edward Plaugher and Major General James Jackson hold first joint press conference

September 12

12:00 a.m.	Chief Schwartz moves Incident Command to the JOC
6:00 a.m.	The JOC opens in Building 405 at Fort Myer
6:00 a.m.	Incident Command Logistics Section is fully operational
10:00 a.m.	Third threat of unidentified aircraft causes full site evacuation

APPENDIX 2
ACRONYM LIST

ACFD	Arlington County Fire Department
ACPD	Arlington County Police Department
ACSO	Arlington County Sheriff's Office
ADIC	Assistant Director in Charge
A&E	Apparatus and Equipment
AFB	Air Force Base
AFIP	Armed Forces Institute of Pathology
AGILE	Advanced Generation of Interoperability for Law Enforcement
ALS	Advanced Life Support
ASAC	Assistant Special Agent-in-Charge
AVL	Automatic Vehicle Locator
BATF	Bureau of Alcohol, Tobacco and Firearms
BLS	Basic Life Support
CAAR	Coalition of Arlington Agencies for Response and Recovery
CALEA	Commission on Accreditation for Law Enforcement Agencies, Inc.
CAO	Chief Administrative Officer
CC	Community Corrections
CEMP	Comprehensive Emergency Management Plan
CID	Criminal Investigation Division
CIRG	Critical Incident Response Group
CISD	Critical Incident Stress Debriefing
CISM	Critical Incident Stress Management
CONOPS	Concept of Operations
CONPLAN	Concept of Operations Plan
CPAS	Cellular Priority Access Service
CWIRP	Chemical Warfare Improvement Response Program
DARPA	Defense Advanced Research Projects Agency
DCFD	District of Columbia Fire Department
DEA	Drug Enforcement Agency
DIA	Defense Intelligence Agency
DISA	Defense Information Systems Agency
DoD	Department of Defense
DOE	Department of Energy
DOJ	Department of Justice

DOT	Department of Transportation
DPP	Domestic Preparedness Program
DPS	Defense Protective Service
DTHC	DiLorenzo TRICARE Health Clinic
DTS	Department of Technology Services
EAP	Employee Assistance Program
EAS	Emergency Alert System
ECC	Emergency Communications Center
ED	Emergency Department
EMS	Emergency Medical Services
EOC	Emergency Operations Center
EPA	Environmental Protection Agency
EPT	Emergency Planning Team
ER	Emergency Room
ESF	Emergency Support Function
ETG	Emergency Task Group
FAA	Federal Aviation Administration
FBI	Federal Bureau of Investigation
FCFRD	Fairfax County Fire and Rescue Department
FCPD	Fairfax County Police Department
FEMA	Federal Emergency Management Agency
HazMat	Hazardous Materials
HHS	Department of Health and Human Services
HOV	High Occupancy Vehicle
ICP	Incident Command Post
ICS	Incident Command System
ID	Identification
IMF	International Monetary Fund
INS	Immigration and Naturalization Service
IST	Incident Support Team
JIC	Joint Information Center
JOC	Joint Operations Center
JTTF	Joint Terrorism Task Force
LP	Liquid Propane
MDT	Mobile Data Terminal
MDW	Military District of Washington
MMRS	Metropolitan Medical Response System

MMST	Metropolitan Medical Strike Team
MOA	Memorandum of Agreement
MOU	Memorandum of Understanding
MSA	Mine Safety Appliance
MWAA	Metropolitan Washington Airports Authority
NCRS	National Capital Response Squad
NIIMS	National Interagency Incident Management System
NMRT	National Medical Response Team
NPS	National Pharmaceutical Stockpile
NRT	National Response Team
NTSB	National Transportation Safety Board
NVRA	Northern Virginia Response Agreement
OAR	Office of Air and Radiation
OR	Operating Room
OSHA	Occupational Safety and Health Administration
OSI	Office of Special Investigations
OSS	Office of Support Services
PA	Public Address
PDD	Presidential Decision Directive
PIO	Public Information Officer
POAC	Pentagon Officers Athletic Center
PPE	Personal Protective Equipment
PSCC	Public Safety Communications Center
SAC	Special Agent-in-Charge
SCBA	Self-Contained Breathing Apparatus
SERV	Special Emergency Response Vehicle
SIOC	Strategic Information Operations Center
SOP	Standard Operating Procedure
SSA	Supervisory Special Agent
SWAT	Special Weapons and Tactics
TOPOFF	Top Officials
TRT	Technical Rescue Team
TSMC	Texas Southwestern Medical Center
USAF	U.S. Air Force
USPHS	U.S. Public Health Service
USPP	U.S. Park Police
US&R	Urban Search and Rescue
USSS	U.S. Secret Service

VDEM	Virginia Department of Emergency Management
VDOT	Virginia Department of Transportation
WFO	Washington Field Office
WMATA	Washington Metropolitan Area Transit Authority
WMD	Weapons of Mass Destruction

APPENDIX 3
DATA REFERENCE DIRECTORY

I – BIBLIOGRAPHY

Regional Agreements

Northern Virginia Emergency Services Mutual Response Memorandum of Agreement (known as the NOVA Agreement)

Memorandum of Understanding to Provide Regional Fire Protection Services Between the City of Alexandria, Fairfax County, VA, and Arlington County, VA, December 12, 1975

Metropolitan Washington Council of Governments Mutual Aid Agreement for Fire and/or Rescue Service, February 2, 1973

Greater Metropolitan Washington Area Mutual Aid Operational Plan

Memorandum of Agreement Between the Department of Defense and Arlington County for Provision of Emergency Medical Services and Fire Protection to the Pentagon and Federal Office Building #2

Memorandum of Understanding Between DiLorenzo TRICARE Health Clinic, Defense Protective Service, and Arlington County Fire Department, July 1999

Arlington County Fire Department and Metropolitan Washington Airports Authority Fire and Rescue Department Memorandum of Understanding, October 30, 1995

Agreement Between the District of Columbia and Arlington County, VA, for the Coordinated Purpose of Fire Rescue and Emergency Services to Certain Areas Within or Near the Banks of the Potomac River (Described in Arlington County Fire Department Standard Operating Procedure "Fire 11")

Northern Virginia Regional Trauma Triage Plan, February 2, 1999

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Northern Virginia Sheriffs' Mutual Aid Agreement

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Arlington County Police Department Procedures: Incident Command System, 570.01, and Disaster Plan, PRO96-76

Virginia Agreements

Virginia Statewide Mutual Aid Compact
(Also Statewide Mutual Aid for Emergency Management Model Authorizing Resolution, Sample Event Agreement, and Commonwealth of Virginia Statewide Mutual Aid Guidebook)
http://www.vdem.state.va.us/library/mutualaid/statemaid.cfm

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Arlington County Emergency Operations Center Event Tracking System Activity Report, September 11, 2001, to September 12, 2001, and September 13, 2001, to September 27, 2001

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Arlington County Sheriff's Office: Operational Debriefing on Pentagon Incident, October 12, 2001

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Andrew Rader U.S. Army Health Clinic: After-Action Report, Pentagon Aircraft Crash Response

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Public Safety Wireless Network Program: Answering the Call: Communications Lessons Learned from the Pentagon Attack

Arlington County Police Department: Command Post Notes, Tuesday, September 11, 2001 (1915 to 2140 hours)

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Pentagon Evacuation Planning Guide (Defense Protective Service, August 2001)

II — Group Debriefings

Arlington County Government: 14 Participants

Arlington County Fire Department: 12 Groups (204 participants)

Mutual Aid Emergency Medical Services, Hospital and Clinics: 7 Groups

Law Enforcement Agencies: 10 Groups (Arlington County Police Department, 75 participants)

III — Individual Interviews

Arlington County Government: County Manager Ron Carlee, Assistant Manager John Mausert-Mooney, Assistant Manager for Public Affairs Richard Bridges, Ms. Dodie Gill, Director of Employee Support; County Board Members Barbara Favola, Paul Ferguson, Jay Fisette, Charles Monroe, and Christopher Zimmerman.

Arlington County Fire Department: Chief Edward Plaugher, Assistant Chief James Schwartz, Assistant Chief John White, Assistant Chief Shawn Kelley; Battalion Chiefs Ray Blankenship, James Bonzono, Randy Gray; Captains Lewis Cooper, Chuck Gibbs, Steve McCoy, Mark Penn, and Robert Swarthout.

Arlington County Police Department: Chief Edward Flynn, Deputy Chief Stephen Holl, Captain Mary Gavin, Captain Rebecca Hackney, Captain Tom Panther, Captain Bonnie Court, Lieutenant Karen Herchenroder, Lieutenant Paul Larson, and Lieutenant Matt Smith.

Arlington County Sheriff's Office: Sheriff Beth Arthur, Chief Deputy Sheriff Mike Raffo.

Defense Protective Service: Chief John Jester, Deputy Chief John Pugrud.

Federal Bureau of Investigation: Special Agent-in-Charge Arthur Eberhart, Assistant Special Agent-in-Charge Bob Blecksmith, Supervisory Special Agent James Rice, Special Agents Christopher Combs, John Adams, Paul Garten, Jennifer Gant, Tara Bloesch, Dan Reilly, Tim O'Connor.

Alexandria Fire Department: Chief Tom Hawkins, Assistant Chief James Gower, Assistant Chief Vincent Whitmore.

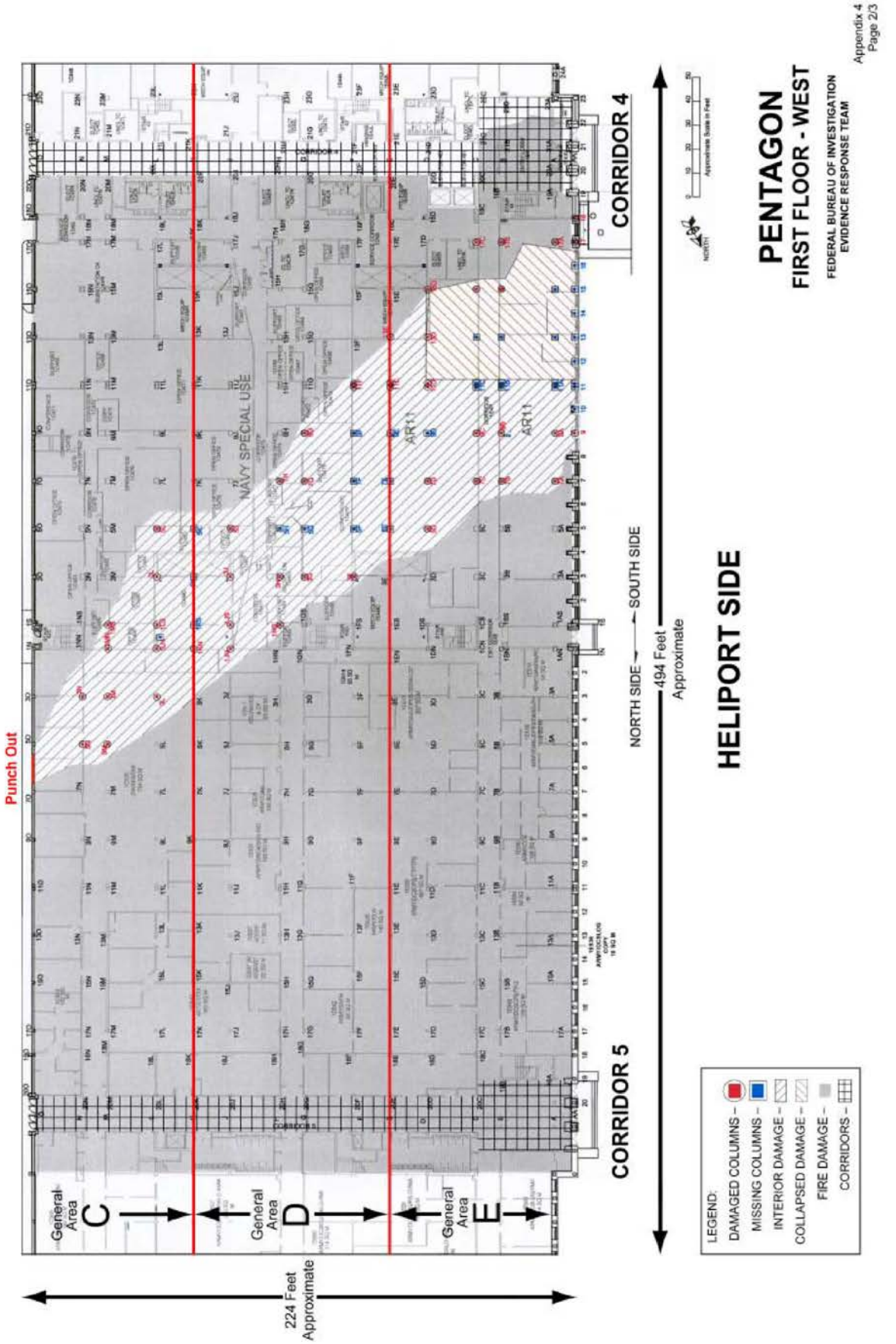
Fairfax County Fire and Rescue Department: Deputy Chief Clark Martin, Deputy Chief Glen Benarick.

Hospitals and Clinics: Inova Alexandria Hospital—Dr. James Vafier, Dr. Martin Brown, Ms. Colleen Mahoney, Ms. Kathleen Thomas; Virginia Hospital Center - Arlington—Dr. Sverha; Washington Hospital Center—Ms. Katie Hollowed; Department of Defense—Lieutenant Arrington, Sergeant Major McGuire, Dr. Marzouk, Dr. Ensign, Major Lorie Brown, Lieutenant Colonel Bitterman.

Others: Emergency Communications Center Steve Souder, Chris Satterfield, Virginia Department of Emergency Management Ms. Cindi Causey, Virginia Medical Examiner Dr. Marcella Fierro, Military District of Washington Major General James Jackson, Metropolitan Washington Airports Authority Ronald Reagan Washington National Airport Fire Department Battalion Chief Tim Lasher and Captain Michael Defina, Fort Myer Fire Department Captain Dennis Gilroy, American Red Cross Arlington County Ms. Susan Aarhus, Virginia Registrar Ms. Deborah Bowser, Department of Health and Human Services Office of

Emergency Preparedness Rock Cornish, Bureau of Alcohol, Tobacco and Fire Arms Special Agent-in-Charge Michael Bouchard.

APPENDIX 4
PENTAGON PENETRATION DAMAGE DIAGRAMS


Appendix 4
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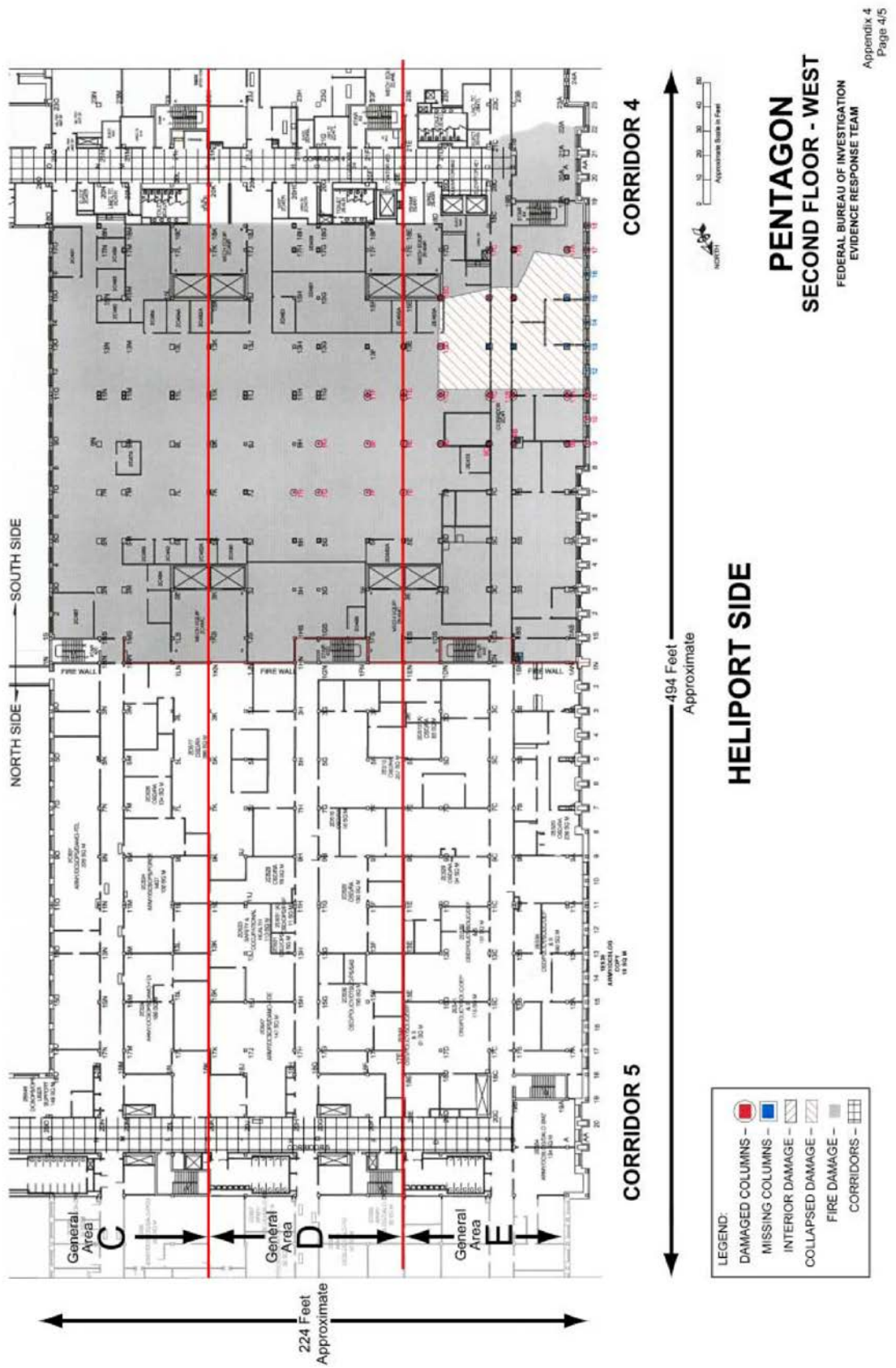
PENTAGON
FIRST FLOOR - WEST
FEDERAL BUREAU OF INVESTIGATION
EVIDENCE RESPONSE TEAM
CORRIDOR 4
CORRIDOR 5
NORTH SIDE
SOUTH SIDE
494 Feet
Approximate
HELIPORT SIDE
Punch Out
NAVY SPECIAL USE
AR1
AR1
General Area C
General Area D
General Area E
224 Feet
Approximate
LEGEND:
DAMAGED COLUMNS –
MISSING COLUMNS –
INTERIOR DAMAGE –
COLLAPSED DAMAGE –
FIRE DAMAGE –
CORRIDORS –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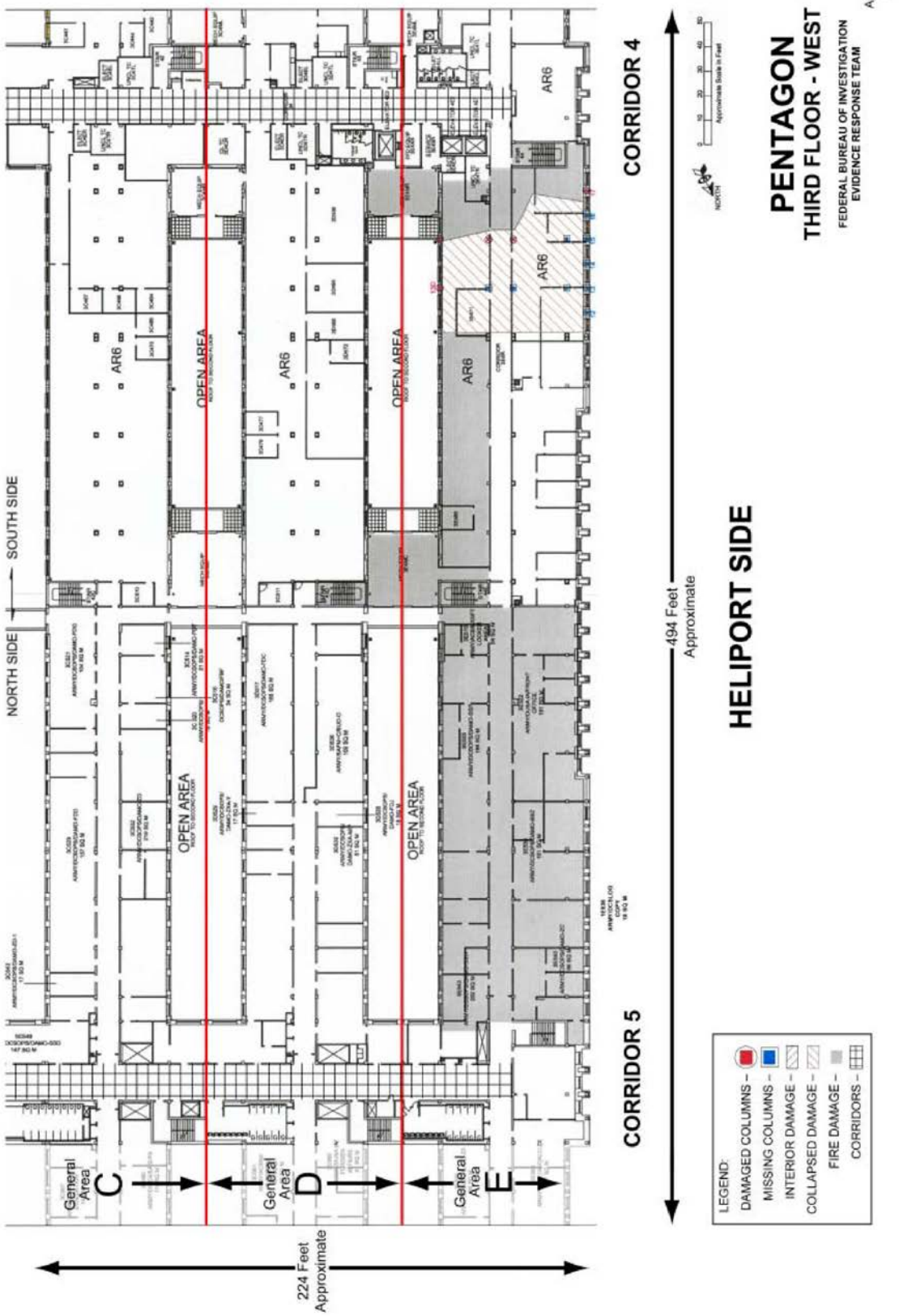
PENTAGON
SECOND FLOOR - WEST
FEDERAL BUREAU OF INVESTIGATION
EVIDENCE RESPONSE TEAM
Approximate Scale in Feet
NORTH
CORRIDOR 4
CORRIDOR 5
494 Feet
Approximate
HELIPORT SIDE
SOUTH SIDE
NORTH SIDE
FIRE WALL
General Area C
General Area D
General Area E
224 Feet
Approximate
LEGEND:
DAMAGED COLUMNS –
MISSING COLUMNS –
INTERIOR DAMAGE –
COLLAPSED DAMAGE –
FIRE DAMAGE –
CORRIDORS –


PENTAGON
THIRD FLOOR - WEST
FEDERAL BUREAU OF INVESTIGATION
EVIDENCE RESPONSE TEAM
Appendix 4
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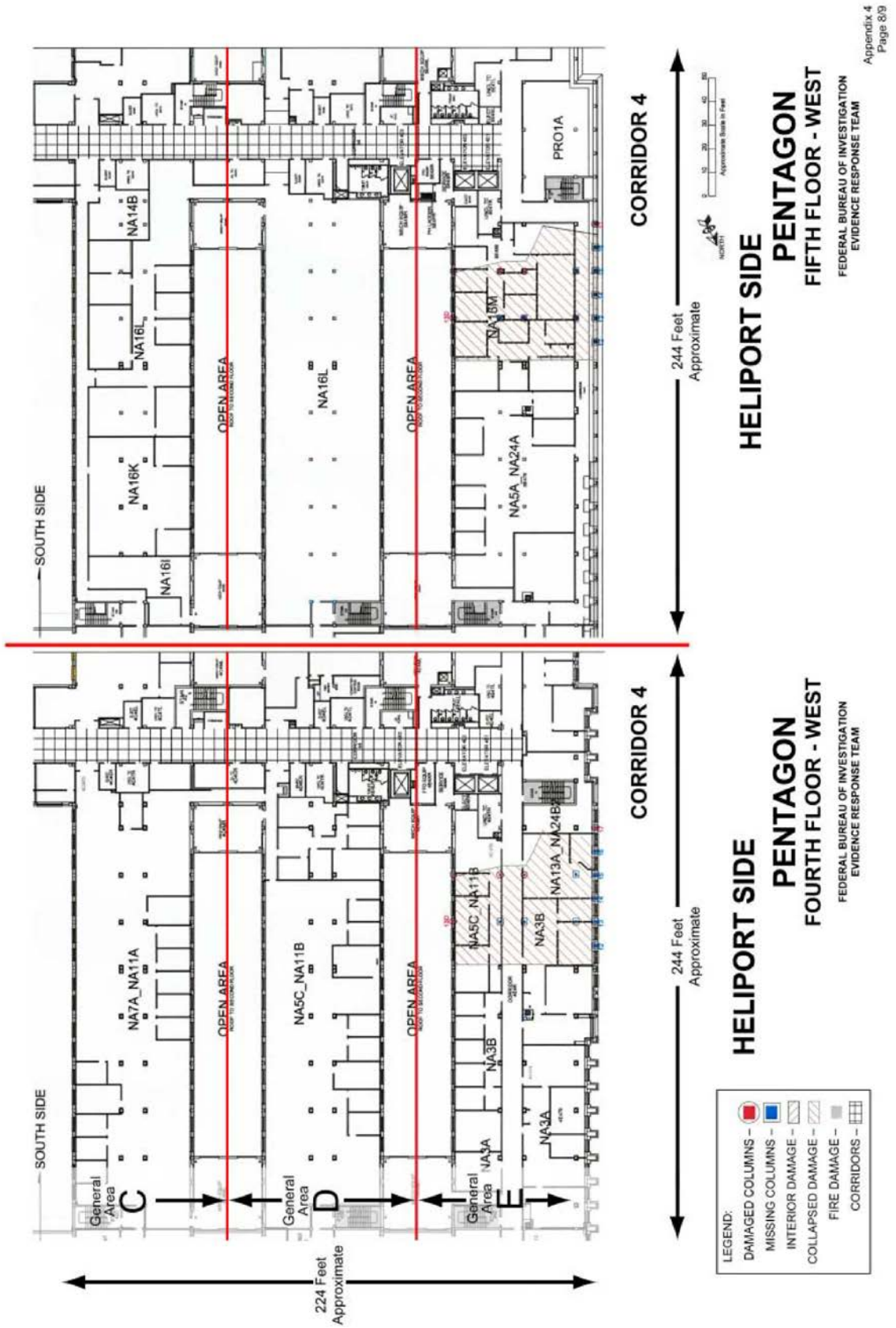
HELIPORT SIDE
494 Feet
Approximate
224 Feet
Approximate
CORRIDOR 4
CORRIDOR 5
SOUTH SIDE
NORTH SIDE
OPEN AREA
AR6
General Area C
General Area D
General Area E
LEGEND:
DAMAGED COLUMNS –
MISSING COLUMNS –
INTERIOR DAMAGE –
COLLAPSED DAMAGE –
FIRE DAMAGE –
CORRIDORS –


Appendix 4
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PENTAGON
FIFTH FLOOR - WEST
FEDERAL BUREAU OF INVESTIGATION
EVIDENCE RESPONSE TEAM
HELIPORT SIDE
CORRIDOR 4
244 Feet
Approximate
SOUTH SIDE
NA14B
NA16L
NA16K
NA16I
OPEN AREA
NA16L
OPEN AREA
NA16M
NA5A_NA24A
PRO1A
PENTAGON
FOURTH FLOOR - WEST
FEDERAL BUREAU OF INVESTIGATION
EVIDENCE RESPONSE TEAM
HELIPORT SIDE
CORRIDOR 4
244 Feet
Approximate
SOUTH SIDE
NA7A_NA11A
OPEN AREA
NA5C_NA11B
OPEN AREA
NA5C_NA11B
NA3B
NA13A_NA24B
NA3B
NA1A
NA3A
General Area C
General Area D
General Area E
224 Feet
Approximate
LEGEND:
DAMAGED COLUMNS –
MISSING COLUMNS –
INTERIOR DAMAGE –
COLLAPSED DAMAGE –
FIRE DAMAGE –
CORRIDORS –


QUIT HELL!!!
WE ARE AMERICA
WE ARE FREE
WE ARE NOT AFRAID
GOD BLESS AMERICA
FBI

APPENDIX F
STRUCTURAL COLLAPSE OPERATIONAL CHECKLIST

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STRUCTURAL COLLAPSE OPERATIONAL CHECKLIST

I. Establish Command

_____ Communicate the exact type of incident.
Type: _____

_____ Communicate the exact location of the incident.
Location: _____

_____ Communicate the Staging Areas for incoming apparatus.
Staging Area: _____

_____ Communicate the name of the incident.
Name of Incident: _____

_____ Communicate the location of the Command Post (CP).
Location of Command Post: _____

II. Determine the Extent of the Incident

_____ Establish hazard and safe zone and evacuate the area.

_____ Remove surface casualties and walking wounded if safe.

- Number Injured (Triage) _____ Minor Injuries _____
- Deceased _____ Delayed _____
  Immediate _____

_____ Number of people trapped: _____

- Location(s):

1. _____
2. _____
3. _____
4. _____
5. _____

_____ Number of people missing: _____

- Last known location(s):

1. _____
2. _____
3. _____
4. _____
5. _____

II. Determine the Extent of the Incident (cont'd)

_____ Type of structure
Description:

_____ Residential
_____ Apartment House
_____ School
_____ Hospital or Care Facility
_____ Multistory/# Floors: _____
_____ Mercantile
_____ Commercial
_____ Industrial

_____ Type of construction
Description:

_____ Wood Frame
_____ Unreinforced Masonry (URM)
_____ Reinforced Masonry
_____ Concrete Tilt-Up
_____ Concrete
_____ Steel Frame

_____ Is further collapse possible? _____ Yes _____ No

_____ Are utilities secured?

- Gas _____ Yes _____ No
- Electric _____ Yes _____ No
- Water _____ Yes _____ No

_____ Do atmospheric hazards exist? _____ Yes _____ No

III. Develop Incident Action Plan and Management Organization

A. Requesting Additional Resources

_____ First Alarm--Apparatus _____
_____ Second Alarm--Apparatus _____
_____ Third Alarm--Apparatus _____
_____ Fourth Alarm--Apparatus _____

_____ Fire Strike Team(s) _____
(Basic Rescue) _____

_____ Light Rescue Strike Team(s) _____
(Wood Frame) _____

A. Requesting Additional Resources (cont'd)

_____ Medium Rescue Strike Team(s) _____
(Cinderblock, two-story URM, _____
heavy timber, tilt-up) _____

_____ Heavy Rescue Strike Team(s) _____
(Type 1 and 2 construction, _____
steel structures, confined space) _____

_____ Medical Strike Team(s) _____
Level of response _____ _____

_____ Urban Search and Rescue (US&R) Task Force TF- _____
62-Member/Self-sustaining 72 Hours TF- _____
Search/Rescue/Medical/Technical Team TF- _____
Heavy Concrete/Technical Rescue TF- _____

_____ Specialized Resources: _____
(See directory) _____
_____
_____
_____

_____ Staging Area/Base Considerations:

- Is the area large enough? _____ Yes _____ No
- Is security needed? _____ Yes _____ No
- Is a medical/rehab area needed? _____ Yes _____ No
- Are feeding operations needed? _____ Yes _____ No
- Are toilet facilities needed? _____ Yes _____ No
- Are rest accommodations needed? _____ Yes _____ No
- Is logistical support for equipment repair and rehabilitation needed? _____ Yes _____ No

_____ Communications Network:

- Channel _____ Designator _____
- Channel _____ Designator _____
- Channel _____ Designator _____
- Channel _____ Designator _____
- Channel _____ Designator _____
- Channel _____ Designator _____
- Channel _____ Designator _____

B. Structure Information

_____ Use structural engineers for assistance.

_____ Type of collapse pattern(s).
- _____ V-collapse
- _____ Lean-to-collapse
- _____ Unsupported lean-to-collapse
- _____ Cantilever
- _____ Pancake collapse

_____ Locate building owner or occupant(s) to obtain additional information concerning structure layout.

_____ Use building blueprints or drawings if available.

_____ Today's Date: _____ Time: _____ Day of Week:_____

_____ Structure size:
- Number of stories: _____
- Size/length: _____ (ft) Width: _____ (ft) Height: _____ (ft)

_____ Construction type and materials.

_____ Attempt to establish location of voids.

C. Structure Entry

_____ Establish search plan.

_____ Have personnel report to check-in officer (note time).

_____ Brief personnel on search plan and possible location of victims and void spaces.

_____ Have all personnel check safety equipment.

_____ Designate communications channel and call sign.

_____ Access best entry route.

_____ Use search markings as needed.

_____ Establish a Rapid Intervention Team (RIT) and stage within the inner perimeter.

D. Scene Safety

_____ Remove unnecessary civilians and personnel from area.

_____ Establish a perimeter:
Inner area: _____
Outer area: _____

_____ Designate:
- Safe travel zones.
- Danger zones.
- Overhead dangers.
- Hazardous areas.
- Restricted areas.
- Areas of retreat.
- Rehabilitation areas.
- Triage area.

_____ Designate:
- A restricted airspace over the incident.
- Heavy equipment Staging Area--(beware of noise and vibrations).
- Equipment staging, work area, cutting station.

_____ Secure utilities:
_____ Gas
_____ Electric
_____ Water

_____ Provide exterior shoring and cribbing where needed to prevent further collapse and stabilize the structure.

_____ Locate points of entry and designate same with building markings which should include date, time, company, and specialized hazards.

_____ Assign an entry officer to the inner perimeter "Hot Zone" and restrict access to authorized personnel only. Establish an entry and exit time log.

_____ Use an emergency evacuation signaling system. All personnel who enter the inner perimeter should be familiar with these signals:

- Cease operations/all quiet--one long blast (3 seconds).
- Evacuate area--1 short blast (1-second each).
- Resume operations--one long and one short blast.

E. Exploration of Voids

_____ Shore and crib as needed for safety.

_____ Establish emergency evacuation routes (keep clear).

_____ Use selective debris removal, cutting, and breaching.

_____ Test for toxic and explosive gases as needed.

_____ Establish oxygen percentage: _____

_____ Identify hazards and mark same.

_____ Follow Occupational Safety and Health Administration (OSHA) confined space guidelines as applicable.

_____ Provide positive pressure ventilation or use self-contained breathing apparatus (SCBAs) where needed.

_____ Be aware of fatigue of rescue personnel.
- Check entry times.
- Rest, rotate, and rehabilitate as needed.

F. Victim Priorities

Once the victim(s) has/have been located:

_____ Attempt to make contact; establish their:
- mental status.
- medical condition.
- environment.

_____ Establish extrication procedures.
- Consider what is trapping the victim(s).
- Consider possible load shift, secondary collapse, or aftershock.
- Consider the victim's status and environment.

_____ If multiple victims, evaluate the following:
- Survivability.
- Extrication difficulty.
- Estimated extrication time.
- Prioritize victim extrication based upon these categories.

_____ Once patient contact has been made:
- Consider crush syndrome and treat for same.
- Treat and package the victim for removal.

G. Situation Status

_____ Conduct situation briefings.

_____ Examine problems.

_____ Develop strategies.

_____ Reestablish priorities as needed.

_____ Request additional resources as needed.

_____ Medical control.

_____ Use and control volunteers.

H. Incident Wrapup

_____ Establish that areas have been searched and all victims have been removed from the structure.

_____ Develop plan to retrieve victims' personal items.

_____ Stabilize structure and provide security.

_____ Rest and rehabilitate all personnel.

_____ Debrief all personnel.

_____ Demobilize all equipment and apparatus.

_____ Maintain accurate records regarding actions taken, times and personnel, equipment, apparatus, and agencies involved with the incident.

_____ Conduct critical incident stress debriefing (CISD) as needed.

_____ Critique the incident.

_____ Follow up with both victim(s) and rescuer status checks.

_____ Document response activities.

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APPENDIX G
STRUCTURAL COLLAPSE SCENE ASSESSMENT CHECKLIST

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STRUCTURAL COLLAPSE
SCENE ASSESSMENT CHECKLIST

BUILDING NAME OR
STRUCTURE TYPE: _____ DATE: _____

LOCATION: _____ TIME: _____

OCCUPANCY TYPE: _____

CONSTRUCTION: _____ TYPE OF COLLAPSE: _____

NO. OF STORIES: _____ ACCESS TO INCIDENT SITE: _____

HAZARDS:

STRUCTURAL INSTABILITY
( ) ROOF
( ) FLOOR
( ) WALL
( ) COLUMN/BEAM
( ) OTHER

OVERHEAD HAZARDS
( ) HANGING WALLS
( ) HANGING FLOORS
( ) POWER LINES
( ) OTHER WIRES
( ) OTHER

SURFACE HAZARDS
( ) POWER LINES
( ) REBARS
( ) FLOODING
( ) UNSTABLE DEBRIS
( ) UNSTABLE OPENINGS

BELOW GRADE HAZARDS
( ) FLOODING
( ) ESCAPING GAS
( ) OXYGEN DEFICIENCY
( ) SHIFTING DEBRIS
( ) DEEP SHAFTS

DAMAGED UTILITIES
( ) NATURAL GAS
( ) LPG
( ) WATER
( ) EXPOSED WIRES
( ) RAW SEWAGE
( ) OTHER

HAZARDOUS MATERIALS
( ) CORROSIVE
( ) FLAMMABLE LIQUIDS
( ) FLAMMABLE GASES
( ) PESTICIDES
( ) POISONS
( ) RADIOACTIVE MATERIALS

HAZARDS: ( ) FIRE/SMOKE ( ) DUST ( ) BIOLOGICAL ( ) OTHER _____

VICTIMS:

VICTIMS REPORTED MISSING: _____ DETECTED: _____

LOCATION: _____ LOCATION: _____
LOCATION: _____ LOCATION: _____
LOCATION: _____ LOCATION: _____

VOID ACCESS AREAS:

SIDE A: _____ SIDE B: _____
SIDE C: _____ SIDE D: _____
ABOVE: _____ BELOW: _____

OTHER NOTES: _____

(USE REVERSE SIDE OF PAGE FOR BUILDING/SCENE DIAGRAM)

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APPENDIX H
STRUCTURE/HAZARDS MARKING SYSTEM

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STRUCTURE/HAZARDS MARKING SYSTEM

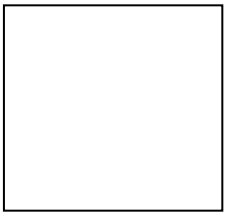
The identity and location of individual structures is crucial at incidents involving several structures or large areas of damage. The use of existing street names and addresses should always be considered first. If due to damage and this is not possible, use the existing hundred block and place all even numbers on one side of the street and all odd numbers on the other side. Mark the new numbers on the front of the structure with orange spray paint. If due to damage the name of the street is not identifiable, start with the letter "A" using the phonetic alphabet "Alpha," "Bravo," "Charlie," etc.

Structure hazards identified during initial sizeup activities and throughout the incident should be noted. A structure/hazards mark should be made on the outside of all normal entry points. Orange spray paint seems to be the most easily seen color on most backgrounds and line marking (or downward spray cans) apply the best paintmarks. Lumber chalk or lumber crayons should be used to mark additional information inside the search mark itself (because they are easier to write with than spray paint).

A large (approximately 2-foot) square box should be outlined at any entrance accessible for entry into any compromised structure. Use orange paint for this marking. Specific markings will be clearly made adjacent to the box to indicate the condition of the structure and any hazards found at the time of the assessment. Normally, the square box marking would be made immediately adjacent to the entry point identified as safe. An arrow will be placed next to the box indicating the direction of the safe entrance (if the structure/hazards marking must be made somewhat remote from the safe entrance).

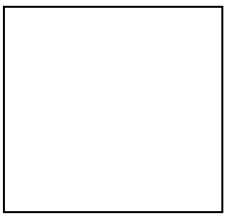
Structure/Hazards Markings

Make a large (2-by-2-foot) square box with orange spray paint on the outside of the main entrance to the structure. Put the date, time, hazardous material conditions, and team (or company) identifier **outside** the box--on the right hand side. This information should be made with lumber crayon or lumber chalk.



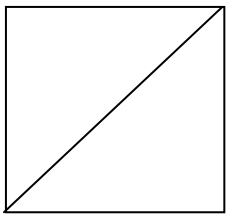
9/12/93
1310 hours
HM--nat. gas
SMA--E-1

Structure is accessible and safe for search-and-rescue operations. Damage is minor with little danger of further collapse.



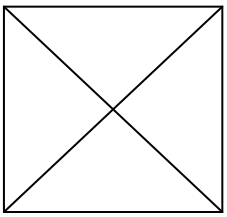
9/12/93
1310 hours
HM--none
SMA--E-1

Structure is significantly damaged. Some areas are relatively safe, but others may need shoring, bracing, or removal of falling and collapse hazards.



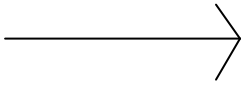
9/12/93
1310 hours
HM--nat. gas
SMA--E-1

Structure is not safe for search-and-rescue operations. May be subject to sudden additional collapse. Remote search operations may proceed at significant risk. If rescue operations are undertaken, safe haven areas and rapid evacuation routes should be created.



9/12/93
1310 hours
HM--nat. gas
SMA--E-1

Arrow located next to a marking box indicates the direction to a safe entrance into the structure (used when the marking box needs to be made remote from the indicated entrance).



Search Marking System

Search markings must be easy to make, read, and understand. To be easily seen, the search mark must be large and of a contrasting color to the background surface. Orange spray paint seems to be the most easily seen color on most backgrounds and line marking (or downward spray cans) apply the best paint marks. Lumber chalk or lumber crayons should be used to mark additional information inside the search mark itself (because they are easier to write with than spray paint).

A large, distinct marking will be made outside the main entrance of each building or structure searched. This "main entrance" search marking will be completed in two steps. First, a large (approximately 2-foot) single slash shall be made near the main entrance at the start of the search. After the search of the entire structure has been completed, a second large slash will be drawn in the opposite direction (forming an "X"). Specific information will be placed in all four quadrants of the main entrance "X." This information summarizes the entire search of the structure.

Left quadrant = Rescue Team identifier.
Top quadrant = date and time that search was completed.
Right quadrant = any significant hazards located in the structure.
Bottom quadrant = number of "live" or "dead" victims still inside the structure.

Use a small "x" in the bottom quadrant if no victims are inside the structure.

During the search function, while inside the structure, a large single slash will be made upon entry of each room or area. After the search of the room or area has been completed, a second large slash will be drawn in the opposite direction forming an "X." The only information placed in any of the "X" quadrants while **inside the structure** will be that pertaining to any significant hazards or the number of "live" or "dead" victims.

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APPENDIX I
TEMPORARY SHORING AT PENTAGON

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A Review of the Temporary Shoring Used to Stabilize the Pentagon After the Terrorist Attacks of September 11th, 2001

(L to R: Structural Specialists Leo Titus, VA-TF1, Richard Kahler and Bernie Denke, VA-TF2 discuss monitoring operations)

A Final Scholarly Paper
Submitted by

Leo J. Titus, Jr., P.E.
Structural Specialist
Virginia Task Force One Urban Search & Rescue Team

Principal
ECS, Ltd., Chantilly, Virginia, USA

Submitted to Dr. M. Sherif Aggour, P.E.
University of Maryland, Department of Civil Engineering

May 3, 2002

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Additional figures are provided in Appendix III

Introduction

The attacks of September 11th, 2001 presented new challenges to fire and rescue personnel and to the engineering community. The nature of the attack was hardly expected, and the results were devastating. In the hours following the attacks, the Federal Emergency Management Agency (FEMA) deployed its Urban Search and Rescue teams to both the World Trade Center in New York City and to the Pentagon in Arlington, Virginia.

During the deployment at the Pentagon, four FEMA Urban Search and Rescue Task Forces worked together to assess the structural damage and to stabilize the structure to allow recovery of victims and evidence. A fifth Task Force from New Mexico (NM-TF1) was brought in during the last few days to relieve the teams that had been there all week and to finalize shoring operations. This paper is a review of the shoring performed by the Urban Search and Rescue Task Forces during their deployment at the Pentagon.

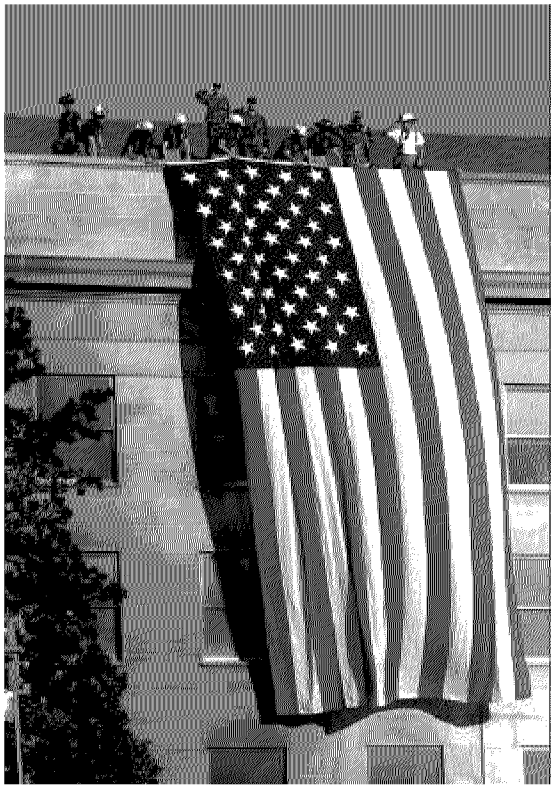


Figure 1. Members of the United States military, Arlington County Fire Department and the Fairfax County Fire Department drape a large American flag over the side of the Pentagon, September 12, 2001.

Overview of the FEMA Urban Search & Rescue Response System

FEMA established the National Urban Search and Rescue (US&R) response system in 1989. At present, there are 28 US&R Task Forces in the United States. Each maintains an inventory of search and rescue equipment and is prepared to deploy within six hours of activation by FEMA.

When deployed, an US&R Task Force is made up of 62 specialists grouped into four major areas of expertise: Search, Rescue, Technical and Medical. These groups include professional firefighters, paramedics, doctors, engineers, heavy rigging specialists, K-9 search dog teams, logistics, communications and planning personnel.

A copy of the September 13th, 2001 VA-TF1 organizational chart from the Pentagon Incident is shown in Figure 2. The organizational chart was updated and reprinted at the beginning of each shift. It provides an example of how a Task Force is organized during a deployment. The four squads that are shown on the chart are made up of mostly professional fire fighters specially trained for urban search and rescue. During a deployment, their primary function is search and rescue of live victims. For the majority of the Pentagon deployment, these four squads operated as "shoring squads", constructing the shoring that stabilized the structure.

Figure 2. Organizational Chart for the Pentagon Incident, September 13th, 2001

The equipment carried by the Task Force includes sensitive listening equipment, cutting and drilling tools, structural monitoring equipment, temporary shoring devices, medical supplies as well as enough food, water and shelter to supply a 62 person Task Force for up to 72 hours.

The role of the US&R Task Force is to utilize the skills of the Task Force members and the specialized equipment to search damaged structures for potential live victims, provide emergency medical care to victims, evaluate structural hazards for rescue personnel and stabilize damaged structures during rescue operations.

The Fairfax County FEMA US&R Task Force, Virginia Task Force One (VA-TF1), is one of the most experienced groups in the FEMA system. VA-TF1 has been deployed by FEMA to the Oklahoma City bombing in 1995, and several hurricanes. In addition, VA-TF1 is one of only two US&R teams authorized by the United States State Department to deploy overseas. VA-TF1 has been deployed to earthquakes in Armenia, the Philippines, Taiwan, Turkey and the terrorist bombing in Nairobi, Kenya.

Role of US&R Structural Specialists

Whenever a US&R Task Force is deployed, two Structural Specialists are assigned to the team. According to the FEMA Field Operations Guide (FOG) for the US&R response system, Structural Specialists are "...responsible for performing the various structural assessments for the Task Force during incident operations." The FOG outlines five major duties of the Structural Specialist during deployments:

1. Evaluating immediate structural conditions that will be entered by Task Force personnel during operations.

2. Determining the type and amount of structural hazard mitigation in order to reduce risks to Task Force personnel.

3. Cooperating and assisting search and rescue workers.

4. Being accountable for all issued equipment.

5. Performing any additional tasks assigned during a mission.

The Structural Specialist works closely with the rescue and shoring squads as well as the Safety Managers, Heavy Rigging Specialists, Hazardous Materials Specialists and Operations Managers. During the Pentagon deployment, the Structural Specialist's role was primarily evaluating structural damage, guiding shoring operations and monitoring movements of the building. The Structural Specialists that were assigned to the Pentagon incident in September of 2001 are listed below:

VA-TF1: Dean Tills
Tony Beale
Leo Titus
Stan Murphy

VA-TF2: Dennis Clark (IST)
Bernie Denke
Richard Kahler

MD-TF1: Mark Tamaro
Tom Stanton (IST)
Victor Hare
Robert Frances

TN-TF1: Anthony Kirk
James Chastain

NM-TF1: Michael Hessheimer
Gerald Wellman

Figure 3. FEMA Structural Specialists review the building plans and plan shoring operations.

Background of the Terrorist Attack at the Pentagon

American Airlines Flight 77, a Boeing 757 out of Dulles Airport, flew into the west side of the Pentagon at approximately 9:38 a.m. There were 64 people on board and the plane carried 30,000 pounds of fuel intended for the long trip to California.

The Pentagon is divided into five wedges. The area of impact was near the division of Wedge 1 and Wedge 2. The section known as Wedge 1 had been under renovation and was scheduled for final completion on Wednesday, September 12th, 2001. The plane reportedly was flying very low and struck the building at the first and second story levels. Figure 4 shows the approximate point of impact between Wedges 1 and 2.

Figure 4. Approximate location and angle of impact and its relationship to Wedge 1 and Wedge 2 (Tills, 2001)

Deployment of FEMA Task Forces to the Pentagon

The Fairfax County FEMA US&R Task Force, Virginia Task Force One (VA-TF1) was alerted at 10:56 a.m. on the morning of September 11th. Task Force members were instructed to contact Task Force headquarters and report to Fire Station 18 in Falls Church, VA as quickly as possible with full gear.

Two buses were chartered and the Task Force, along with its truck loads of equipment were escorted by police to the Pentagon. The entire team and the convoy of supplies arrived at the Pentagon at approximately 1:00 p.m., less than three and a half hours after the impact. Figure 5 is a photograph taken from one of the Task Force buses at approximately 1:00 as they first arrived on site. As Figure 5 shows, the Arlington County Fire Department was still fighting the fire when VA-TF1 arrived at the scene.

Figure 5. 1:00 p.m. September 11th, 2001.
Photo taken by Leo Titus from one of the VA-TF1 buses.

FEMA deployed four other US&R Task Forces to the Pentagon. The majority of the remaining FEMA US&R teams were deployed to the World Trade Center in New York City. VA-TF1 was the first FEMA team to arrive on site. MD-TF1 out of Montgomery County, MD arrived later in the afternoon on September 11th. VA-TF2 out of Virginia Beach arrived later during the night. TN-TF1 arrived from Tennessee during the day on September 12th. The last FEMA team arrived from New Mexico (NM-TF1) a week later to assist in finishing the shoring operations. A group of United States Army rescue specialist from the Military District of Washington (MDW) were also on site assisting in the shoring operations.

In addition to the US&R Task Forces, FEMA had an Incident Support Team (IST) in place in the early hours of the incident. The IST is a small group of experienced US&R veterans that provide logistical and planning support to the Task Forces during the operation.

On a typical deployment, a Task Force will split into a day shift and a night shift. However, since there were four Task Forces on site during the Pentagon incident, two teams worked the day shift and two worked the night shift. The two Virginia Task Forces were assigned to the night shift, 6:00 p.m. to 6:00 a.m., while the Tennessee and Maryland Task Forces were on the day shift. The IST held daily transitional meetings at 6:30 a.m. and 6:30 p.m. as the shifts changed to exchange information and update everyone on the previous shift activities.

Initial Reconnaissance and Evaluation of the Structure

Soon after arriving at the site, two reconnaissance teams were organized by VA-TF1. The mission of the reconnaissance team was to enter the building and search for live victims, assess structural damage and identify rescue hazards. Each team was comprised of a canine search specialist, hazardous materials specialist, structural specialist and several rescue squad members.

As the reconnaissance teams entered the building, the magnitude of the destruction was realized. The debris from the impact and explosion extended from the floor to the ceiling. This made maneuvering very difficult as the team attempted to move through the building. Figures 6 and 7 are pictures taken on the first floor of the Pentagon in the first days after the attack. They illustrate the obstacles that the recon teams were faced with. Other conditions which made the reconnaissance even more difficult were the intense heat, smoke and scalding water falling from the fire suppression activities on the upper floors.

Figure 6. First floor interior damage.

Figure 7. First floor interior damage

The reconnaissance quickly determined that it was unlikely there were any survivors in the building due to the intense fire caused by the jet fuel. The fire had been so intense, it has been estimated that the heat in some areas exceeded 2,000 degrees Fahrenheit. Since it was unlikely that there were any survivors, the mission quickly turned from a rescue operation into recovery of victims and evidence.

Safe completion of the mission meant that a significant amount of stabilization of the building would be required. Building plans were provided to the structural specialists by contractors that were associated with the Pentagon Renovation Program. These contractors had offices at the Pentagon and were on site at the time of the attack. The damage was surveyed and mapped by the Structural Specialists and plans for stabilizing the structure were underway.

Overview of the Structural Damage

In order to have a better understanding of the damage caused by the attack, it is necessary to review the layout of the Pentagon structure. In addition to the five wedges previously discussed (Wedges 1 through 5), the Pentagon is comprised of five rings (rings A through E). The "A" ring is the innermost ring, and going outward, B, C, D with E being the outermost ring. The plane entered E ring at an angle and the force of the explosion punched through three of the five rings of the Pentagon. A nine foot diameter exit hole was created in the wall of C ring and the remainder of the debris from the impact ended up in the alley between C ring and B ring known as A & E Drive. Figure 8 identifies the rings of the Pentagon and the approximate point of impact.

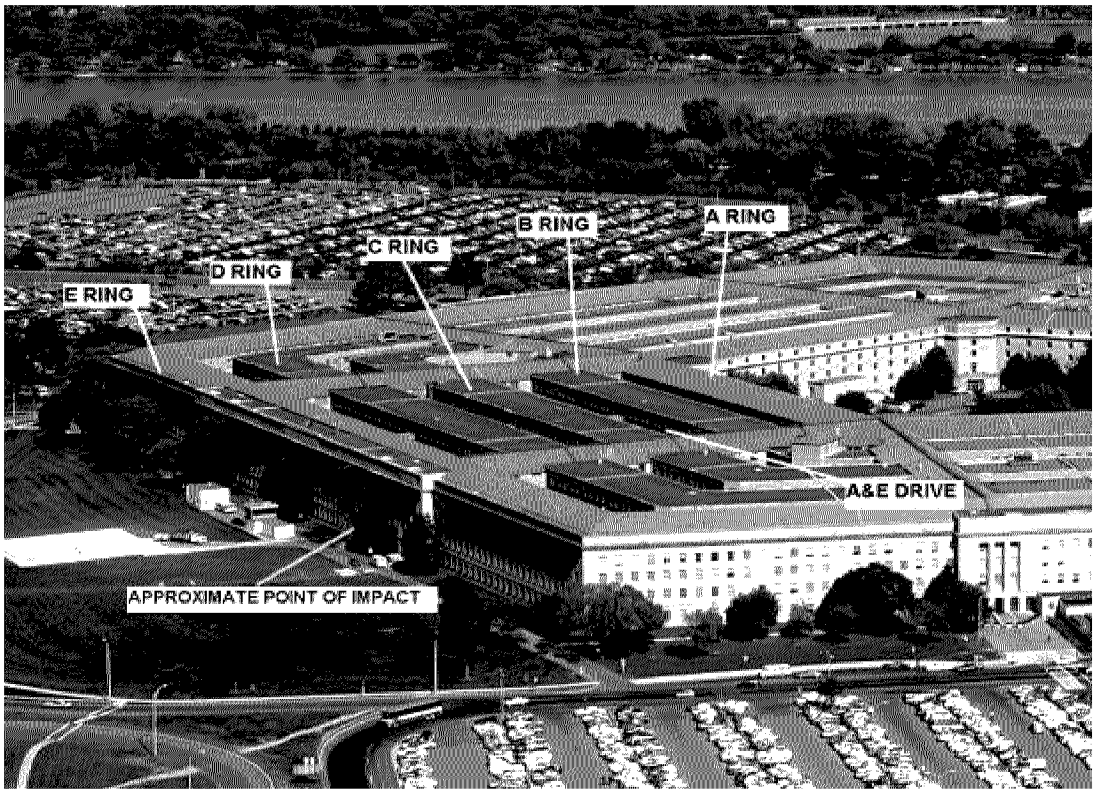


Figure 8. Identification of the five Pentagon rings and the approximate point of impact.

The most significant damage was where the building actually collapsed. This area, referred to as "the collapse zone", actually remained standing for about 20 minutes after the initial impact. This is important since it allowed time for people to escape. The plane struck very close to an expansion joint in the building. When the portion of the building collapsed, it left a clean vertical break along the expansion joint.

The portion of the structure to the north of the collapse zone had significant column damage and appeared very unstable. Two columns were missing and a third had been severely damaged. This meant that the corner was now a cantilever spanning 3 column bays (approximately 80 feet) and it was not known how long it would hold up before collapsing. Figure 9 shows the missing columns adjacent to the collapse area. This photograph was taken at approximately 3:00 p.m. on September 11th.

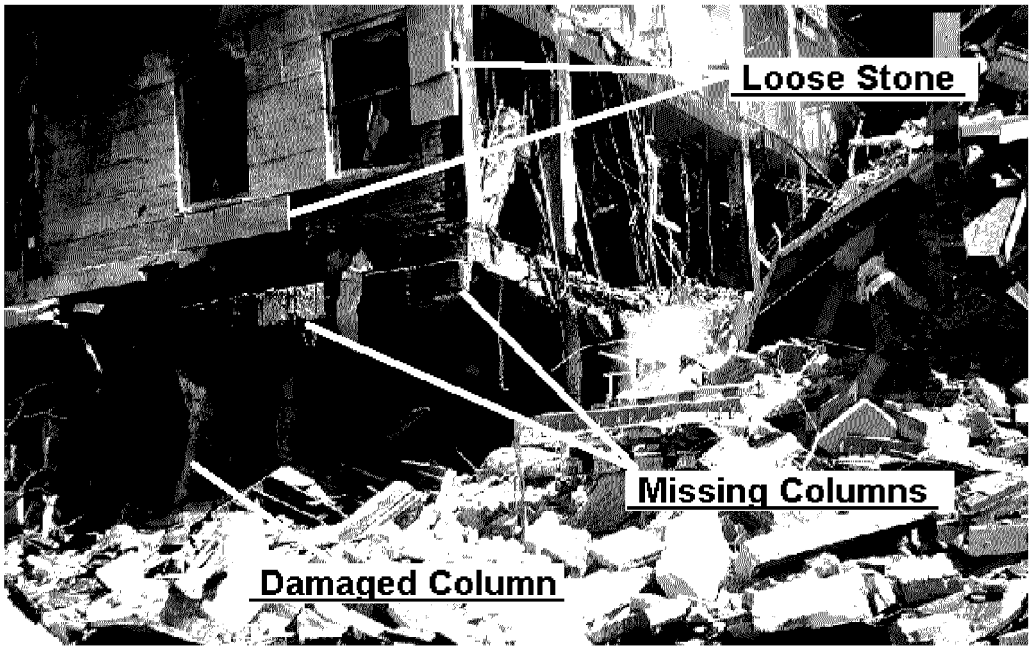


Figure 9. Missing Columns. The corner of the structure adjacent to the collapse was missing two columns and one was severely damaged. The section cantilevered approximately 80 feet.

During the week the FEMA Task Forces were on site, the Structural Specialist devoted a good deal of time to thoroughly mapping the damage. Figure 10 was created by the Structural Specialists using plans provided by the Pentagon Renovation contractors. The damage mapped on the plan reveals the angle of entry of the plane and its path through the outer three rings of the building.

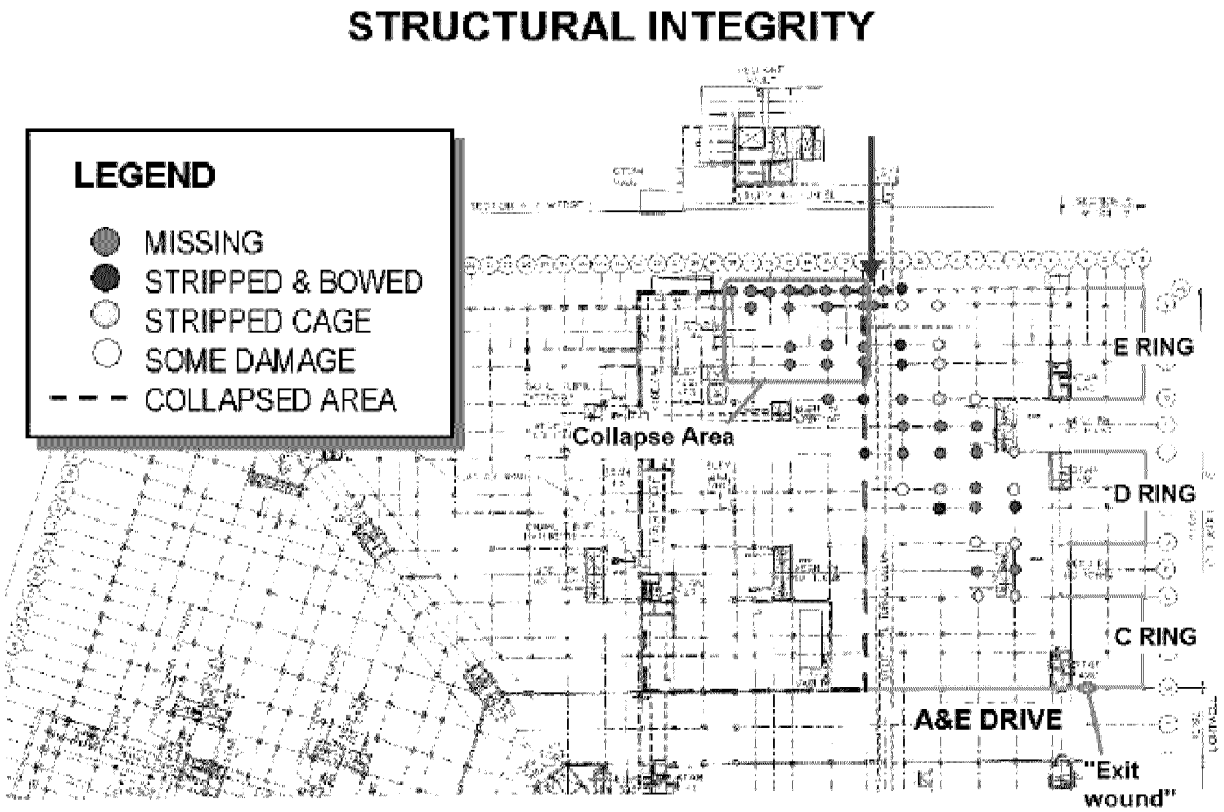


Figure 10. Structural Integrity Plan. Indicates missing and damaged columns. (Tills, 2001)

Figure 11 is a photograph taken in A&E drive showing a 9 foot diameter "exit wound" where the plane debris exited the C ring. There were very few identifiable plane parts in the wreckage. Most of the plane disintegrated from the intense heat of the fireball. Other than some fire and smoke damage, there was a relatively small amount of damage in the A and B rings.

Figure11. A&E Drive. The plane exited through C ring and left a pile of debris. The water is from the fire fighting activities. Very few traces of the airplane remained intact.

Internal structural damage in Rings C, D and E was significant. Concrete columns were blown apart and twisted into unrecognizable pieces of rubble. The spiral reinforcing steel in the columns had an eerie skeletal appearance. Several beams were missing and holes were blown up through the second floor. Figure 12 is a good example of the internal damage to the concrete structure. Additional pictures of the structural damage are included in the appendix.

Figure 12. Internal damage to concrete columns and beams.

In addition to the structural damage from the initial explosion and subsequent fire, there was a tremendous amount of debris from all of the furnishings, utilities and miscellaneous interior finishes. The debris created obstacles for the shoring crews during the operations. Before each shore could be constructed, the debris had to be cleared from the area where the shore was to be built.

Although the damage was significant, analysis of the damage has indicated that the renovation of the building played a significant role in saving lives. Most casualties in a blast effected building are caused by flying glass and debris. The force protection measures installed during the renovation likely reduced the number of casualties by reducing the amount of debris forced into the building by the explosion (Winston, 2001). Fortunately, because the renovation was still officially under construction, several offices were vacant at the time of the incident, so the number of casualties was less that what it would have been if was occupied at full capacity. (Evey, 2002)

In addition to reduced casualties, it is believed that the newly installed sprinkler system and force protection reduced the amount of damage that would have likely occurred if the renovation had not been completed. In Wedge 2, where the renovation had not yet started, the amount of damage from fire was significantly greater that the Wedge 1 section. Figures 13 and 14 are a comparison of the damage to offices in the renovated and non-renovated sections.

Figure 13. Office in Wedge 2. No sprinklers

Figure 14. Office in Wedge 1.
Sprinklers recently installed

Monitoring

Throughout the shoring and recovery operations, the building was monitored by the Structural Specialists and Heavy Rigging Specialists 24 hours per day. Monitoring was done using transits, binoculars, radios and air horns for emergency signaling. Once demolition of the collapsed area started, monitoring was also done from the air using a man basket suspended by a crane. The Structural Specialists took turns going up in the basket to look at the structure from a different angle and to watch for victims as pieces of debris were removed.

Movement of the building or large pieces of debris being monitored with the transits was recorded at 15 minute intervals. In the event significant movement was observed, the Operations and Safety Managers were notified and decisions would be made on whether or not to evacuate the shoring teams. There was some minor movement observed daily believed to be associated with fluctuations in temperature. Other than that, there was relatively little movement of the structure recorded during the shoring operations. However, it was reported that the building began to show some significant movements several weeks after the shoring was completed and just prior to the demolition started to kick off the reconstruction phase.

There were a few occasions where sudden movements of debris and a flash fire required emergency evacuations of the shoring crews inside. Fortunately, there were no serious injuries during the entire operation.

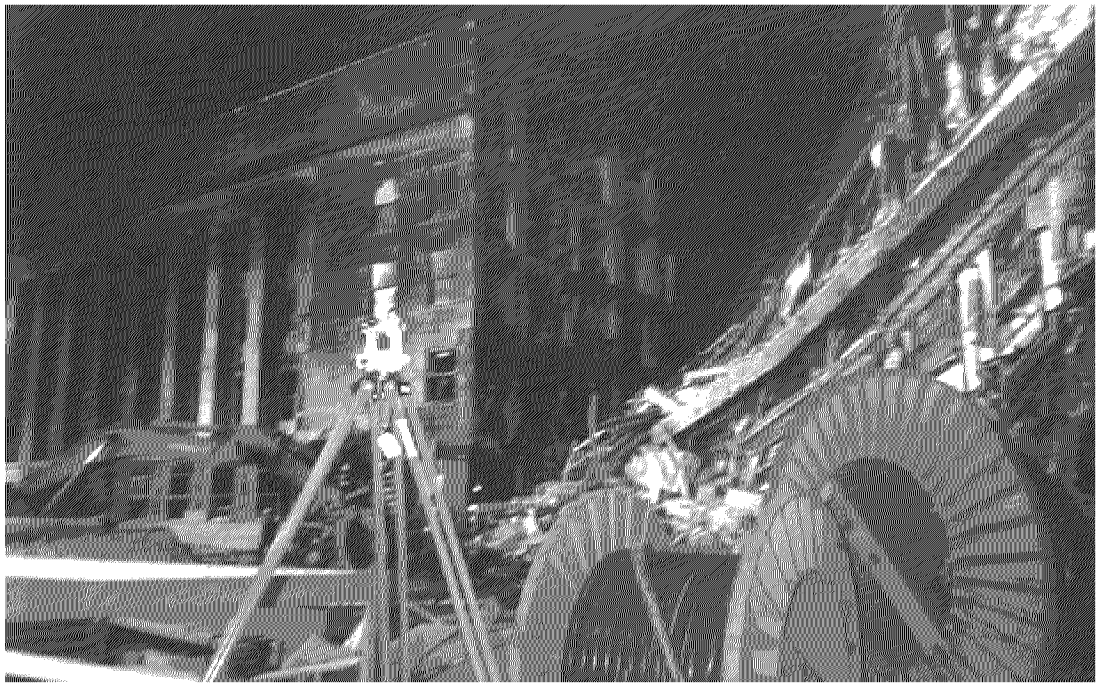


Figure 15. Transit monitoring station.
Transits were set up to monitor several points on the building during the shoring operations.

Shoring Operations

As mentioned earlier, the initial reconnaissance discovered that the structure was unstable and several columns were known to be missing. There were areas inside the building that were unsafe to enter during the initial reconnaissance, so it was unclear on the afternoon of September 11th how many columns would eventually need to be shored.

The U.S. Army Corps of Engineers (USACE) publication Urban Search & Rescue Structural Specialist Training Manual defines shoring as follows: "Shoring for US&R is the temporary support of only that part of a damaged, collapsed or partly collapsed structure that is required for conducting search and/or rescue operations at reduced risk to the victims and US&R forces."

The Structural Specialists on site agreed that the most critical area in need of shoring was the exterior column line, just to the north of the collapse zone. The plan for this area was to construct two nine point crib shores and a solid crib shore to support the vertical loads of the four levels above the damaged area. Figure 16 shows the shoring operations underway in the early morning hours of September 12th.

Figure 16. Start of shoring operations. Photo taken as the first crib shore is being completed at approximately 1:00 a.m. the morning of September 12th, 2001.

However, before the shoring work could begin, there were several logistical challenges that had to be overcome:

1. Lumber to construct the shores had to be requested and delivered. The IST worked with representatives of the Pentagon Renovation Project, the Home Depot and other contractors to get several loads of lumber delivered to the site.

2. Debris had to be removed from hazardous areas before shoring could begin. The United States Army brought several units to the site to provide additional manpower for clearing and removing debris. After stockpiling the debris, it was hauled to a parking lot on the north side of the building where the FBI spread it out and sorted through it for evidence. Occasionally a victim or evidence was found while removing the debris, which delayed operations even longer as the appropriate agency was called in for removal.

3. Loose limestone panels on the exterior of the building (known as "widow makers") had to be knocked down so there weren't any overhead dangers while shoring operations were going on. Several panels were observed located immediately above the areas that required shoring on the exterior column line. Rescue personnel pried off several of the loose panels with crowbars.

4. Areas for lumber storage and cutting stations had to be designated. Initially, a large area of the concrete helicopter pad adjacent to the collapse zone was designated for storage of lumber and shoring supplies and a cutting station was built. Later in the week a second storage and cutting area was set up inside of A & E drive.

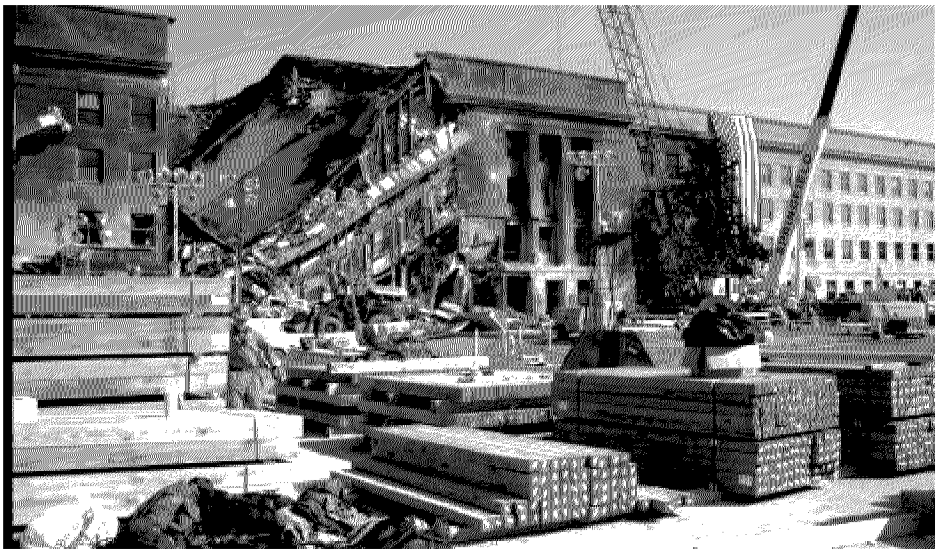


Figure 17. Lumber storage. Lumber for shoring was delivered to the site by Home Depot and stored on the concrete helicopter pad.

5. Lighting had to be supplied since much of the shoring activity would be done at night or inside the building which had no lighting. The IST coordinated obtaining lighting equipment to allow work to continue 24 hours per day. There was enough lighting to begin shoring the night of the 11th, however, sufficient lighting for the rest of the operations did not arrive until the second day.

6. Monitoring stations with transits had to be set up for the Structural Specialists to keep a close eye on potential shifts in the building during the operation. Three transits were initially set up monitoring the corner of the building adjacent to the collapse zone and a large concrete parapet that was being held up by only a few pieces of reinforcing steel. The Structural Specialists and Heavy Rigging Specialists kept monitoring logs during the entire operation.

Once all of these issues were resolved, the shoring process could begin. According to monitoring logs recorded by the Structural Specialists, shoring began at approximately 11:45 p.m. on the night of September 11th, 2001. A copy of the first monitoring log is included in the appendix of this paper and notes the status of the shoring activity throughout the night. (Titus, 2001)

The US&R teams are trained to construct several different types of shores that may be necessary during a rescue operation. The US Army Corps of Engineers has published a manual titled "Urban Search and Rescue Structural Specialist Field Operations Guide". This guide provides step-by-step instructions on how to build the shores and provides detailed sketches of the shoring systems. Copies of the shoring diagrams that were used at the Pentagon the week of September 11th are included in the appendix.

Several types of shores were used during the shoring operations:

1. Crib Shores
2. Vertical Post Shores
3. Steel Raker Shores

Three crib shores and one vertical shore was constructed on the exterior column line. According to the monitoring log, these shores were completed at approximately 5:45 a.m. the morning of September 12th.

Review of the Shoring

The following discussion covers a brief description of the types of shoring systems that were used during the deployment. Copies of the standard shoring diagrams from the US Army Corps of Engineers "Urban Search & Rescue Structural Specialist Field Operations Guide" (FOG) are included in the appendix.

Crib Shores

Crib shores were the most common type of shore used for two primary reasons. First, they have the highest capacity of all the shoring systems in the FOG. Second, and possibly just as important, there are relatively simple and quick to build. Once debris was removed, a crib shore took approximately one hour to complete.

Crib shore capacities are dependent on the size of the lumber used and the configuration of the lumber. At the Pentagon, 6" x 6" lumber was used for most of the cribbing. The height of the crib shores ranged from approximately 14 feet (floor to beam) to 15.5 feet (floor to slab). There were three different crib configurations used:

1. 4 Point Crib: Two by two member layout, yielding four points of contact. Approximate capacity: 60,000 lbs. (30 tons).

2. 9 Point Crib: Three by three member layout, yielding nine points of contact. Approximate capacity: 136,000 lbs. (68 tons).

3. Solid Crib: Eight by eight layout, yielding one large point of contact approximately 48" x 48". Estimated capacity: 1.1 million lbs. (576 tons). Only one solid crib was used. It was located at the corner of the cantilevered section of the building, immediately north of the collapse zone. The rescue workers decided to build a solid crib at this location because it was thought that it would be more stable in the event debris broke away from the collapsed area and slid into the shoring. (Tills, 2001).

In general, one crib shore was enough to support damaged columns. However there were six locations where the damage was so significant to the columns and beams that two or three crib shores were required to adequately transfer the load from the upper floors. Figures 18, 19 and 20 are examples of some of the crib shores used to support interior columns. Additional shoring pictures are included in the appendix.

Figure 18. 4 point crib shore. Used to support damaged columns still carrying loads.

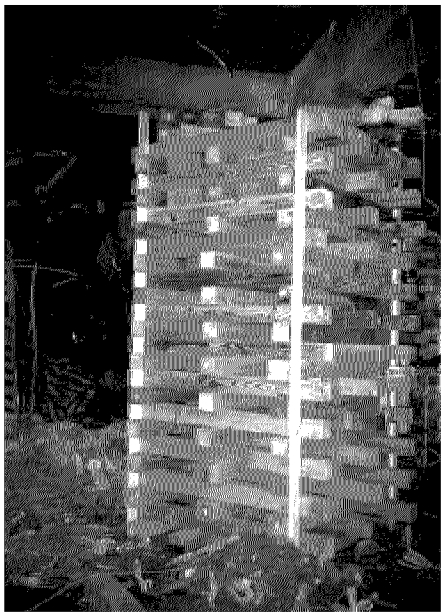


Figure 19. 9 point crib shore. Used where columns were severely damaged or missing completely.

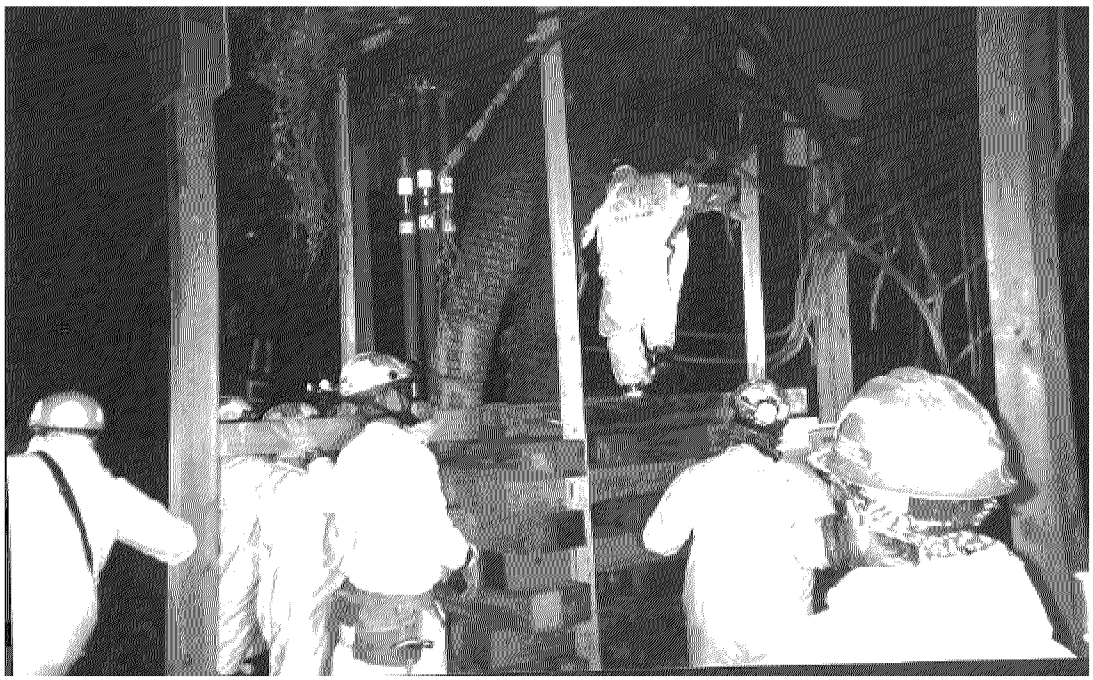


Figure 20. Crib shore at column 11D. Shoring Squad builds a 4 point crib shore around damaged column 11D.

Vertical Post Shores

Vertical post shores were also a common shoring system used during the Pentagon deployment. Vertical post shoring systems are generally used for support of vertical loads. However, many systems have some limited lateral bracing for increased stability. (USACE, 2001). A disadvantage of vertical post shores is that they are more labor intensive. While crib shores are constructed by simply stacking lumber and shimming into place, vertical shores require more measuring and cutting.

There are several types of vertical post shores in the FOG used by US&R Task Forces. Post systems can be as simple as a single post with a header beam and a footer. More complicated post systems include multiple vertical posts with lateral bracing. All systems collect loads with a header beam and transfer the load to the base. Several examples of the different vertical shores are included in Appendix I.

Vertical post shores do not have as high a capacity as the crib shores and are used to support smaller loads. The capacity of a system depends on its configuration, height and materials used. Vertical post systems can support a wide range of loads from 3,000 to 8,000 pounds for simple post shores, up to 80,000 pounds for laced post shores.

During the Pentagon deployment vertical post systems were used to support beams, floor slabs and overhead debris. They were placed strategically to reduce the risk for the shoring squads as they approached the more critical areas that required the higher capacity crib shores. Figures 21 and 22 are photographs of the different vertical shores built by the US&R Task Forces the week of September 11th.

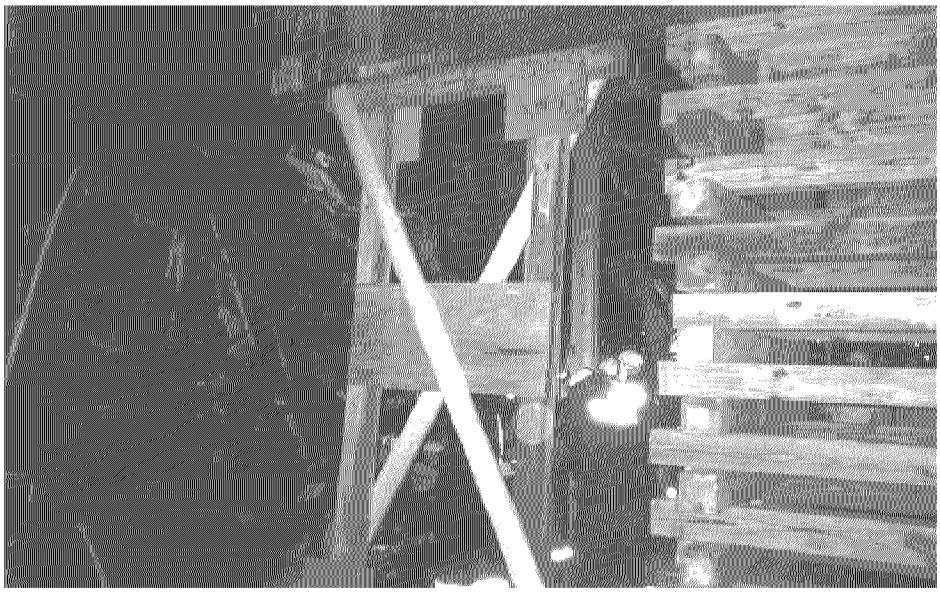


Figure 21. Vertical Shore.
This vertical shore is supporting a beam which allowed the shoring squads to work with reduced risk while building the adjacent crib shore.

Figure 22. Vertical shores.

Raker Shores

Raker shores are designed to laterally brace walls that have the potential for leaning away from a building. Their capacity range significantly based on the type of system, the height and the angle.

On Thursday, September 13th, the crib shore shims along the exterior wall were over tightened which caused the concrete beam to shift slightly. The Structural Specialists decided that it would be prudent to add a raker shore on the cantilevered section to reduce the possibility of the building wall shifting laterally and possibly collapsing.

At the request of the IST, the contractor on site obtained some steel sections (W6 x 25 and W8 x 24) and some miscellaneous plate sections. The US&R Heavy Rigging Specialists and shoring squads completed the fabrication and installation of the raker shore. This raker shore was approximately 14 feet high with a raker angle of about 45 degrees. Adhesive anchors were used for securing the top of the rake to the concrete (Tills, 2001). Figure 23 is a photograph of the raker shore installed. After the raker was installed, no significant lateral movement was observed during the deployment.

Figure 23. Raker Shore for lateral support. Notice the 3 crib shores and 2 vertical post shores for vertical support. The shims at the top of the crib shore were over-tightened causing the concrete beam to shift slightly. VA-TF1 Structural Specialist section leader, Dean Tills, is standing to the left of the raker shore.

Completion of Shoring

Four US&R Task Forces and the team from the Military District of Washington worked 24 hours per day for over a week to stabilize the structure. A fifth Task Force was brought in to relieve the others on the final days of the deployment.

By the end of the deployment, 42 columns required shoring on the first floor using 49 box crib shores. Thirty-five beams were shored on the first floor using T-shores and vertical post shores. On the second floor, six columns were shored with box cribs and five beams were shored with vertical post shores. No shoring was required above the second floor (Stanton, 2001). Other than some minor cuts, bruises and sore feet there were no serious injuries during the operation.

Spreadsheets are included in Appendix II that present a summary of all the shores that were constructed during the deployment.

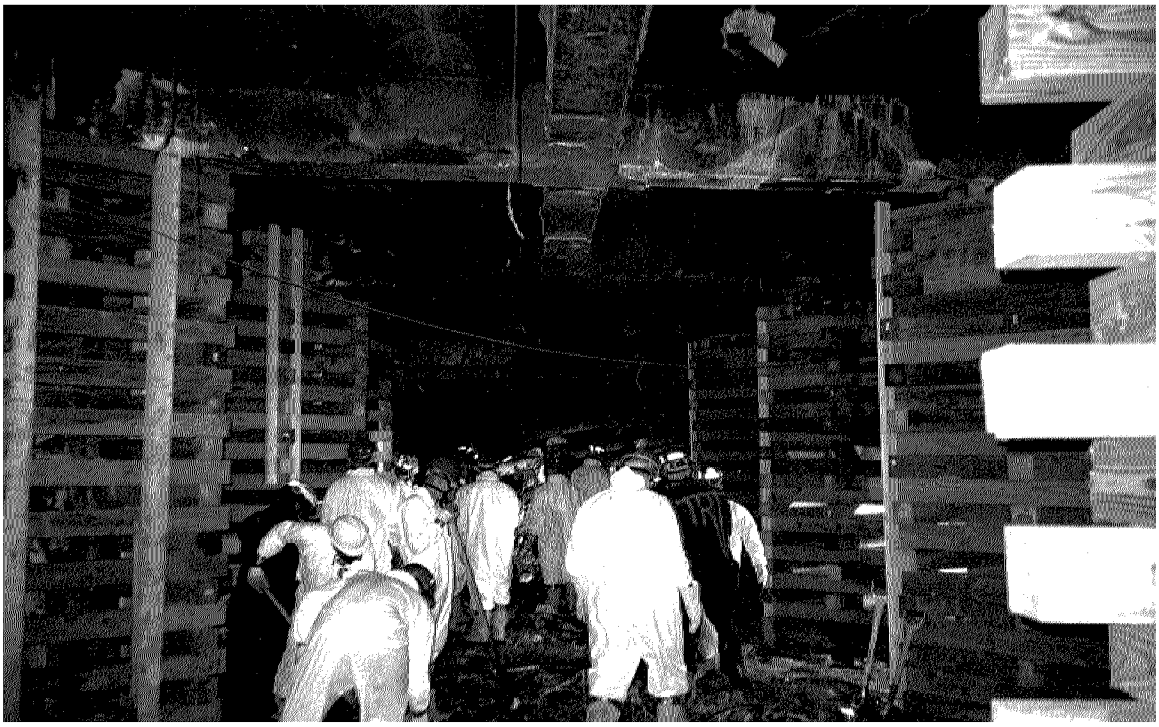


Figure 24.
Miscellaneous debris is cleaned up in an area where crib shores have been completed.

Closing

VA-TF1 was the first US&R Task Force on site on September 11th. Therefore, they were the first to leave on September 18th. After paying final respects to the victims of the tragedy, the Task Force loaded up all of it's equipment and personnel and headed home to a large group of very excited family members and friends.

By September 14th, 2001, plans were already underway for the rebuilding of the Pentagon. The initial goal is to have the building reconstructed and people occupying the outermost offices by September 11th, 2002. By the time all of the recovery had been completed, there were only eleven months left to accomplish this difficult task that is now known as "Project Phoenix".

Demolition of the damaged portion of the structure, approximately 400,000 square feet of office space, was completed on November 19th, 2001 (Evey, 2002). Construction crews worked day and night, seven days a week. On April 5th, 2002, the last concrete placement for the rebuilt structure was completed and a "Topping Out" party was held to celebrate this important milestone. As of May 1, 2002, Project Phoenix is at least six weeks ahead of schedule. There is no doubt in the minds of the workers that they will exceed their goal. They are dedicated to honoring the memory of the lives lost by showing the world what Americans can accomplish in times of crisis. As the rebuilding continues, the FEMA National Urban Search and Rescue Response System is preparing for the next deployment.

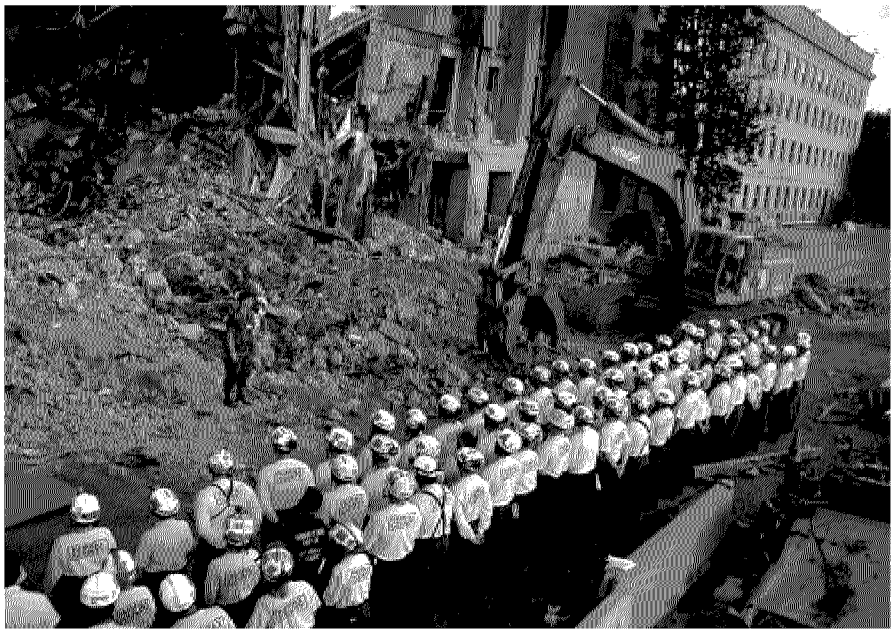


Figure 25. VA-TF1 Goodbye. Members of Virginia Task Force One pay final respects before leaving the Pentagon on September 18th, 2001.

Acknowledgements

The author would like to acknowledge the following individuals who provided information and photographs that aided in the preparation of this paper: From VA-TF1: Dean Tills, P.E., Tony Beale, P.E., Stan Murphy, P.E., and Scotty Boatright. From MD-TF1, Victor Hare and Tom Stanton.

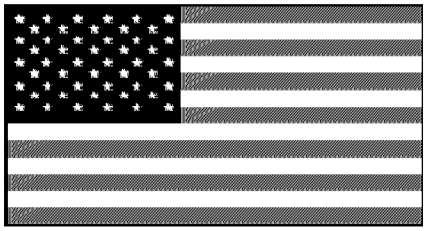
There are too many individuals on the shoring squads to list by name. However, the author would like to acknowledge the tremendous effort by all of the individuals on the shoring squads, the Heavy Rigging Specialists, the other Structural Specialists and all of the other FEMA US&R Task Forces and Military District of Washington members that worked together as a team to accomplish the mission. Specifically, the author would like to express gratitude for the guidance and mentoring during the deployment offered by Rescue Squad Officer, Kent Watts and Structural Specialists, Dean Tills, Tony Beale and Stan Murphy. Their sharing of knowledge and experience was invaluable.

Mr. Allyn Kilsheimer, P.E. of KCE Structural Engineers, PC, was also a valuable source of knowledge during and after the deployment. The author met Mr. Kilsheimer on site the evening of September 11th. He was a part of the Pentagon Renovation team during the recovery operation and since has taken over the oversight of the Phoenix Project.

Some of the contractors that provided materials, equipment and skilled operators included Facchina Construction Co., AMEC Contracting, The Home Depot, Potts & Callahan, Bovis, Dominion Crane, Springfield Crane Rental, Singleton Electric, Rentals Unlimited, National Wrecking, Union Wrecking and the Pentagon Renovation Team

Other Agencies that worked closely with the FEMA Task Forces included the United States Army, the FBI, the United States Army Corps of Engineers, Arlington County Fire Department and Fairfax County Fire Department.

Finally, all of the volunteers and organizations that donated food, supplies and support deserve special recognition. The Salvation Army, The American Red Cross, McDonald's, Wal-Mart, Burger King, the staff at the Crystal City Marriott and many others helped to make the mission a little more comfortable. The cards, letters, emails, flowers and banners sent by school children, teachers, family members and citizens from across the country and the world were read and appreciated by all.



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APPENDIX

I. Monitoring Log from September 11, 2001 and Shoring Diagrams from the US Army Corps of Engineers "Urban Search & Rescue Structural Specialist Training Manual."

II. Pentagon Incident Shoring Tables - Compiled by Tom Stanton, MD-TF1

- First Floor Box Crib Shore Table – Tom Stanton, MD-TF1 (IST)
- First Floor Beam Vertical Shore Table – Tom Stanton, MD-TF1 (IST)
- Second Floor Box Crib Shore Table – Tom Stanton, MD-TF1 (IST)
- Second Floor Beam Vertical Shore Table – Tom Stanton, MD-TF1 (IST)

III. Additional Photographs

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APPENDIX J
FDNY 911 REPORTS

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APPENDIX K
FEDERAL EMERGENCY MANAGEMENT AGENCY INCIDENT COMMAND SYSTEM FORMS

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ICS Form 201

INCIDENT BRIEFING	1. Incident Name	2. Date Prepared	3. Time Prepared
4. Map Sketch			
ICS 201 Page 1 of 4	**5. Prepared by (Name and Position)**		

6. Summary of Current Actions	
ICS 201	Page 2

7. Current Organization	
ICS 201	Page 3

8. Resources Summary				
Resources Ordered	**Resource Identification**	**ETA**	**On Scene**	**Location/Assignment**
ICS 201	Page 4			

ICS Form 202

INCIDENT OBJECTIVES	1. INCIDENT NAME	2. DATE	3. TIME
4. OPERATIONAL PERIOD (DATE/TIME)			
5. GENERAL CONTROL OBJECTIVES FOR THE INCIDENT (INCLUDE ALTERNATIVES)			
6. WEATHER FORECAST FOR OPERATIONAL PERIOD			
7. GENERAL SAFETY MESSAGE			

8. Attachments (☑ if attached)

☐ Organization List (ICS 203)	☐ Medical Plan (ICS 206)	☐ Weather Forecast
☐ Assignment List (ICS 204)	☐ Incident Map	☐
☐ Communications Plan (ICS 205)	☐ Traffic Plan	☐

9. PREPARED BY (PLANNING SECTION CHIEF)	10. APPROVED BY (INCIDENT COMMANDER)

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Organization Assignment List, ICS Form 203

ORGANIZATION ASSIGMENT LIST	1. INCIDENT NAME	2. DATE PREPARED	3. TIME PREPARED

POSITION NAME

4. OPERATIONAL PERIOD (DATE/TIME)

5. INCIDENT COMMAND AND STAFF

INCIDENT COMMANDER	
DEPUTY	
SAFETY OFFICER	
INFORMATION OFFICER	
LIAISON OFFICER	

6. AGENCY REPRESENTATIVES

AGENCY	NAME

7. PLANNING SECTION

CHIEF	
DEPUTY	
RESOURCES UNIT	
SITUATION UNIT	
DOCUMENTATION UNIT	
DEMOBILIZATION UNIT	
TECHNICAL SPECIALISTS	

8. LOGISTICS SECTION

CHIEF	
DEPUTY	

a. SUPPORT BRANCH

DIRECTOR	
SUPPLY UNIT	
FACILITIES UNIT	
GROUND SUPPORT UNIT	

b. SERVICE BRANCH

DIRECTOR	
COMMUNICATIONS UNIT	
MEDICAL UNIT	
FOOD UNIT	

9. OPERATIONS SECTION

CHIEF		
DEPUTY		
a. BRANCH I- DIVISION/GROUPS		
BRANCH DIRECTOR		
DEPUTY		
DIVISION/GROUP		
DIVISION/ GROUP		
DIVISION/ GROUP		
DIVISION/GROUP		
DIVISION /GROUP		
b. BRANCH II- DIVISIONS/GROUPS		
BRANCH DIRECTOR		
DEPUTY		
DIVISION/GROUP		
DIVISION/GROUP		
DIVISION/GROUP		
DIVISION/GROUP		
c. BRANCH III- DIVISIONS/GROUPS		
BRANCH DIRECTOR		
DEPUTY		
DIVISION/GROUP		
DIVISION/GROUP		
DIVISION/GROUP		

d. AIR OPERATIONS BRANCH

AIR OPERATIONS BR. DIR.	
AIR TACTICAL GROUP SUP.	
AIR SUPPORT GROUP SUP.	
HELICOPTER COORDINATOR	
AIR TANKER/FIXED WING CRD.	

10. FINANCE/ADMINISTRATION SECTION

CHIEF	
DEPUTY	
TIME UNIT	
PROCUREMENT UNIT	
COMPENSATION/CLAIMS UNIT	
COST UNIT	

PREPARED BY (RESOURCES UNIT)

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Sample Assignment List, ICS Form 204

1. BRANCH	2. DIVISION/GROUP	**ASSIGNMENT LIST**
3. INCIDENT NAME	4. OPERATIONAL PERIOD DATE _____ TIME _____	

5. OPERATIONAL PERSONNEL

OPERATIONS CHIEF _____ DIVISION/GROUP SUPERVISOR _____
BRANCH DIRECTOR _____ AIR TACTICAL GROUP SUPERVISOR _____

6. RESOURCES ASSIGNED TO THIS PERIOD

STRIKE TEAM/TASK FORCE/ RESOURCE DESIGNATOR	EMT	LEADER	NUMBER PERSONS	TRANS. NEEDED	PICKUP PT./TIME	DROP OFF PT./TIME

7. CONTROL OPERATIONS

8. SPECIAL INSTRUCTIONS

9. DIVISION/GROUP COMMUNICATIONS SUMMARY

FUNCTION		FREQ.	SYSTEM	CHAN.	FUNCTION		FREQ.	SYSTEM	CHAN.
COMMAND	LOCAL				SUPPORT	LOCAL			
	REPEAT					REPEAT			
DIV./GROUP TACTICAL					GROUND TO AIR				

PREPARED BY (RESOURCE UNIT LEADER)	APPROVED BY (PLANNING SECT. CH.)	DATE	TIME

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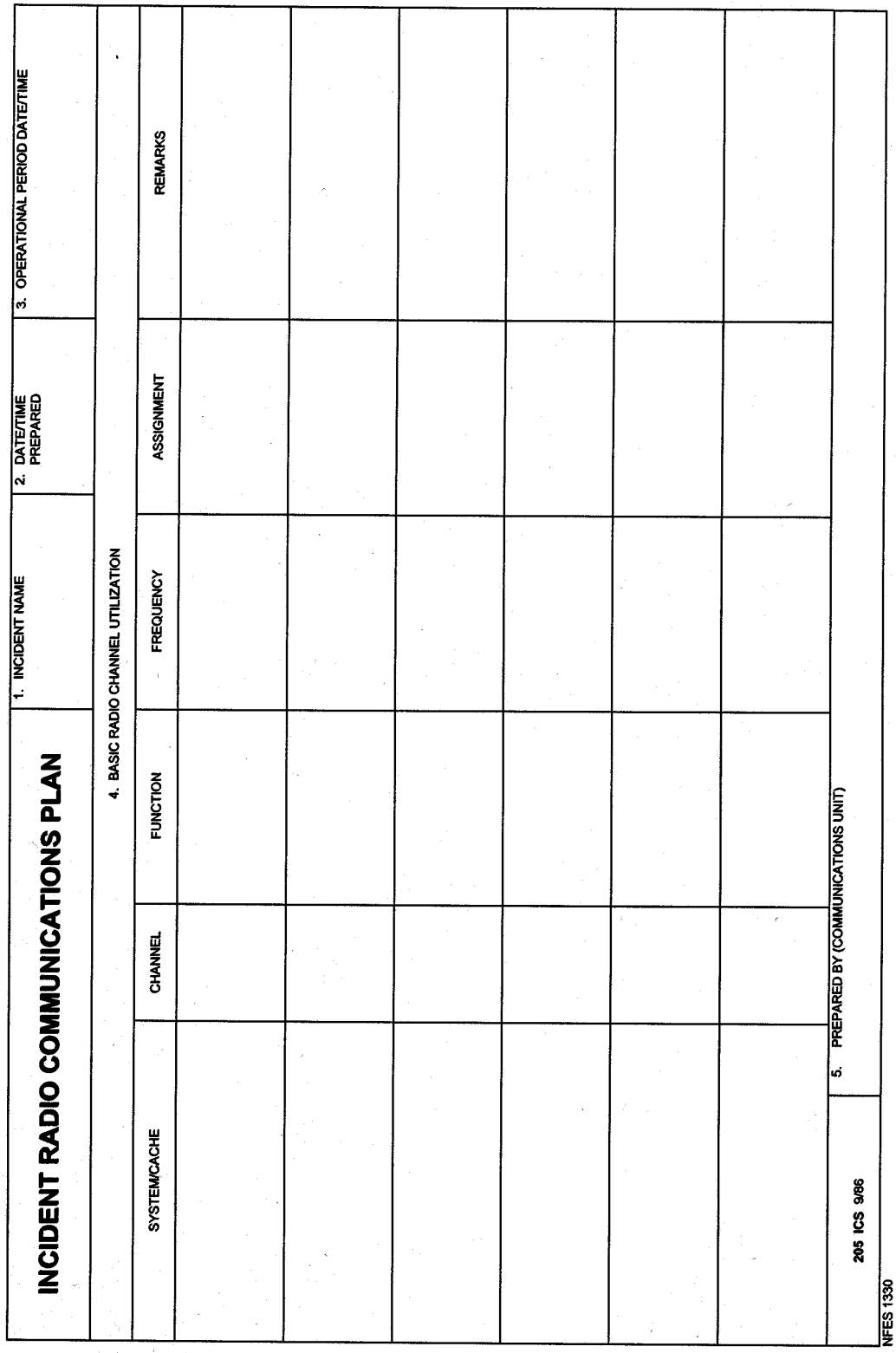
Sample Incident Communications Plan, ICS Form 205



INCIDENT RADIO COMMUNICATIONS PLAN

1. INCIDENT NAME
2. DATE/TIME PREPARED
3. OPERATIONAL PERIOD DATE/TIME

4. BASIC RADIO CHANNEL UTILIZATION

SYSTEM/CACHE	CHANNEL	FUNCTION	FREQUENCY	ASSIGNMENT	REMARKS

5. PREPARED BY (COMMUNICATIONS UNIT)

205 ICS 9/86

NFES 1330

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MEDICAL PLAN	1. INCIDENT NAME	2. DATE PREPARED	3. TIME PREPARED	4. OPERATIONAL PERIOD

5. INCIDENT MEDICAL AID STATIONS

MEDICAL AID STATIONS	LOCATION	PARAMEDICS	
		YES	NO

6. TRANSPORTATION

A. AMBULANCE SERVICES

NAME	ADDRESS	PHONE	PARAMEDICS	
			YES	NO

B. INCIDENT AMBULANCES

NAME	LOCATION	PARAMEDICS	
		YES	NO

7. HOSPITALS

NAME	ADDRESS	TRAVEL TIME		PHONE	HELIPAD		BURN CENTER	
		AIR	GRND		YES	NO	YES	NO

8. MEDICAL EMERGENCY PROCEDURES

206 **ICS** 8-78	9. PREPARED BY (MEDICAL UNIT LEADER)	10. REVIEWED BY (SAFETY OFFICER)

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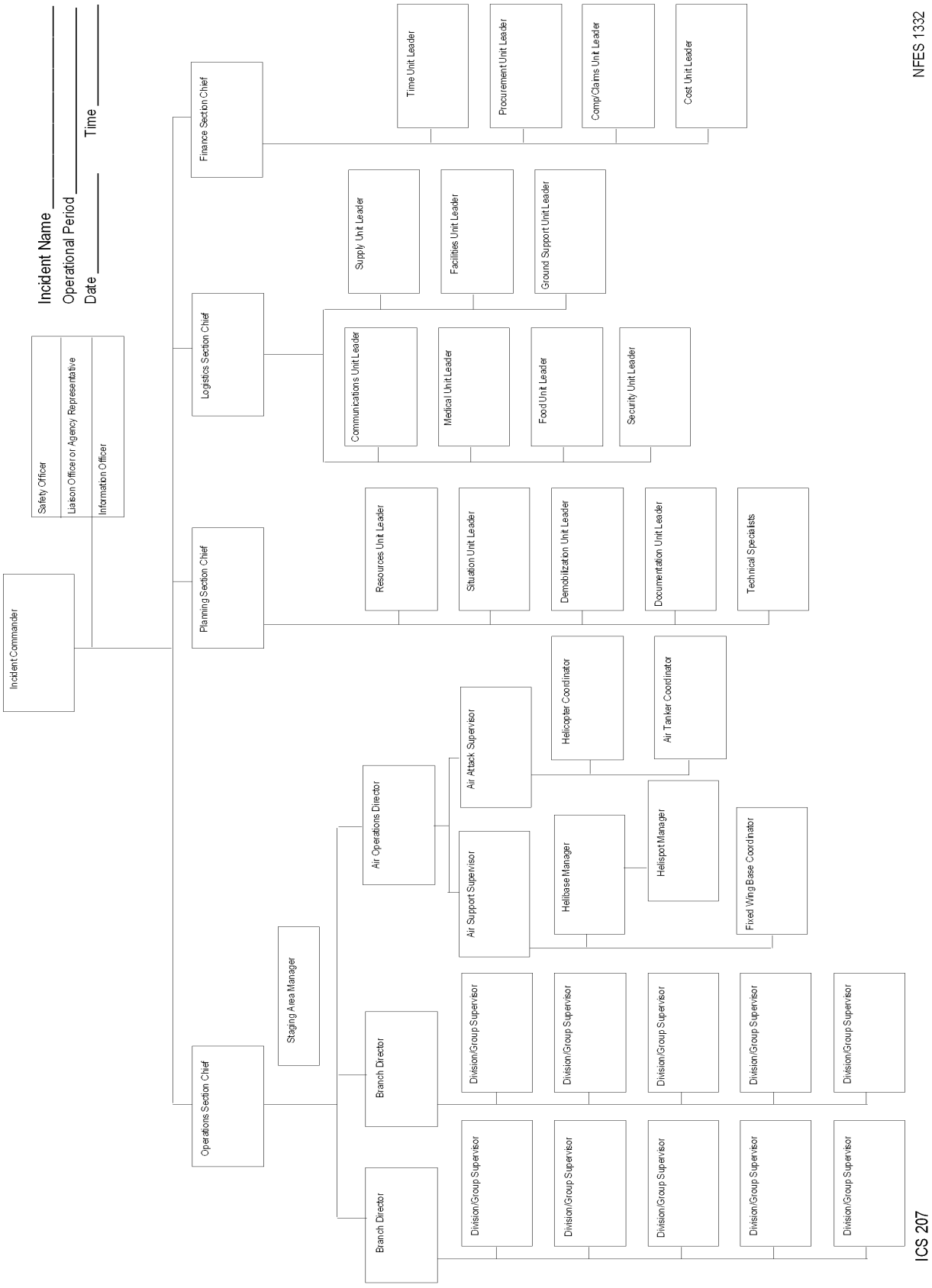
Incident Name
Operational Period
Date
Time
Incident Commander
Safety Officer
Liaison Officer or Agency Representative
Information Officer
Operations Section Chief
Staging Area Manager
Branch Director
Branch Director
Air Operations Director
Air Attack Supervisor
Air Support Supervisor
Helicopter Coordinator
Air Tanker Coordinator
Helibase Manager
Helispot Manager
Fixed Wing Base Coordinator
Division/Group Supervisor
Division/Group Supervisor
Division/Group Supervisor
Division/Group Supervisor
Division/Group Supervisor
Division/Group Supervisor
Division/Group Supervisor
Division/Group Supervisor
Division/Group Supervisor
Division/Group Supervisor
Planning Section Chief
Resources Unit Leader
Situation Unit Leader
Demobilization Unit Leader
Documentation Unit Leader
Technical Specialists
Logistics Section Chief
Communications Unit Leader
Medical Unit Leader
Food Unit Leader
Security Unit Leader
Supply Unit Leader
Facilities Unit Leader
Ground Support Unit Leader
Finance Section Chief
Time Unit Leader
Procurement Unit Leader
Comp/Claims Unit Leader
Cost Unit Leader
ICS 207
NFES 1332

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INCIDENT STATUS SUMMARY
FS-5100-11

1. Date/Time	2. Initial ☐ Update ☐ Final ☐	3. Incident Name	4. Incident Number

5. Incident Commander	6. Jurisdiction	7. County	8. Type incident	9. Location	10. Started Date/Time

11. Cause	12. Area Involved	13. % Controlled	14. Expected Containment Date/Time	15. Estimated Controlled Date/Time	16. Declared Controlled Date/Time

17. Current Threat	18. Control Problems

19. Est. Loss	20. Est. Savings	21. Injuries	Deaths	22. Line Built	23. Line to Build

24. Current Weather WS Temp WD RH	25. Predicted Weather WS Temp WD RH	26. Cost to Date	27. Est. Total Cost

28. Agencies

29. Resources																				Totals
Kind of Resource	SR	ST	SR	ST	SR	ST	SR	ST	SR	ST	SR	ST	SR	ST	SR	ST	SR	ST	SR	ST	
ENGINES																					
DOZERS																					
CREWS Number of Crews:																					
Number of Crew Personnel:																					
HELICOPTERS																					
AIR TANKERS																					
TRUCK COS.																					
RESCUE/MED.																					
WATER TENDERS																					
OVERHEAD PERSONNEL																					
TOTAL PERSONNEL																					

30. Cooperating Agencies

31. Remarks

32. Prepared by	33. Approved by	34. Sent to: Date Time By

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DESIGNATOR
NAME/ ID. NO. _____

_____

STATUS

☐ ASSIGNED ☐ AVAILABLE ☐ O/S REST
☐ O/S MECHANICAL ☐ O/S MANNING
_____ ETR (O/S= Out of Service)

FROM	LOCATION	TO
	DIVISION/GROUP	
	STAGING AREA	
	BASE/ICP	
	CAMP	
	ENROUTE	ETA
	HOME AGENCY	

MESSAGES

RESTAT
TIME_____ PROCESS ☐

ICS FORM 210 6/83 STATUS CHANGE CARD NFES 1334

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ICS Form 211

INCIDENT CHECK-IN LIST

1. Incident Name

2. Check-In Location (complete all that apply)

☐ Base ☐ Camp ☐ Staging Area ☐ ICP Restat ☐ Helibase

3. Date/Time

Check one:

☐ Personnel ☐ Handcrew ☐ Misc.
☐ Engines ☐ Dozers
☐ Helicopters ☐ Aircraft

Check-In Information

4. List Personnel (overhead) by Agency & Name -OR- List equipment by the following format:				5.	6.	7.	8.	9.		10.	11.	12.	13.	14.	15.	16.
Agency	Single	Kind	Type	I.D. No/Name	Order/Request Number	Date/ Time Check-In	Leader's Name	Total No. Personnel	Manifest Yes	Manifest No	Crew or Individual's Weight	Home Base	Departure Point	Method of Travel	Incident Assignment	Other Qualifications	Sent to RESTAT Time/Int

Page ___ of ___

17. Prepared by (Name and Position) *Use back for remarks or comments*

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ICS 213

GENERAL MESSAGE		
TO:	POSITION:	
FROM:	POSITION:	
SUBJECT:	DATE:	TIME:
MESSAGE:		
SIGNATURE:	POSITION:	
REPLY:		
DATE:	TIME:	SIGNATURE/POSITION:

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UNIT LOG	1. Incident Name	2. Date Prepared	3. Time Prepared
4. Unit Name/Designators	5. Unit Leader (Name and Position)		6. Operational Period

7. Personnel Roster Assigned

Name	ICS Position	Home Base

8. Activity Log

Time	Major Events

9. Prepared by (Name and Position)

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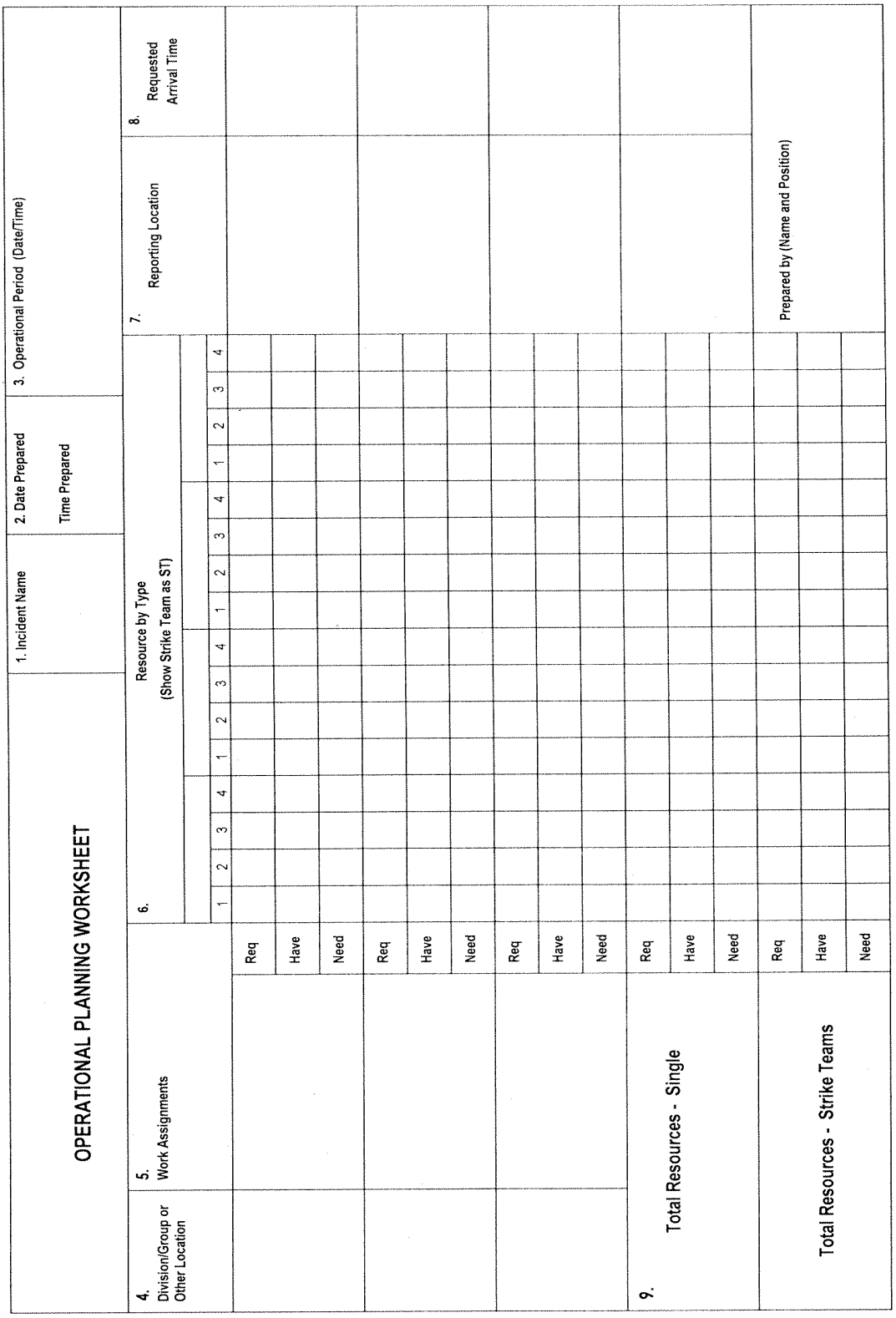
ICS 215


OPERATIONAL PLANNING WORKSHEET
1. Incident Name
2. Date Prepared
Time Prepared
3. Operational Period (Date/Time)
4. Division/Group or Other Location
5. Work Assignments
6. Resource by Type (Show Strike Team as ST)
7. Reporting Location
8. Requested Arrival Time
Req
Have
Need
9. Total Resources - Single
Total Resources - Strike Teams
Prepared by (Name and Position)

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Incident Action Plan Safety and Risk Analysis Form, ICS 215A

INCIDENT ACTION PLAN SAFETY ANALYSIS	1. Incident Name	2. Date	3. Time						
Division or Group	Potential Hazards	Mitigations (e.g., PPE, buddy system, escape routes)							Prepared by (Name and Position)
	Type of Hazard:								
	Type of Hazard:								
	Type of Hazard:								
	Type of Hazard:								
	Type of Hazard:								
	Type of Hazard:								
	Type of Hazard:								
	Type of Hazard:								

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RADIO REQUIREMENTS WORKSHEET			1. Incident Name			2. Date			3. Time		
4. Branch			5. Agency			6. Operational Period			7. Tactical Frequency		
8. Division/Group			Division/Group			Division/Group			Division/Group		
Agency			Agency			Agency			Agency		
9. Agency	ID No.	Radio Requirements	Agency	ID No.	Radio Requirements	Agency	ID No.	Radio Requirements	Agency	ID No.	Radio Requirements
Page 1 of			10. Prepared by (Name and Position)								

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RADIO FREQUENCY ASSIGNMENT WORKSHEET

1. INCIDENT NAME | 2. DATE | 3. OPERATIONAL PERIOD (DATE/TIME)

3. RADIO DATA / 4. INCIDENT ORGANIZATION				BRANCH	DIVISION	DIVISION	DIVISION	BRANCH	DIVISION	DIVISION	DIVISION	BRANCH	DIVISION	DIVISION	DIVISION	INCIDENT COMMANDER	SAFETY OFFICER	OPERATIONS SECTION CHIEF	AIR OPERATIONS	AIR TACTICAL GROUP SUPERVISOR	PLANNING SECTION CHIEF	GROUND SUPPORT UNIT	BASE UNIT							COMM CENTER	TOTAL BY REQ.
SOURCE	FUNCTION	CH#	FREQUENCY																												
5. AGENCY	ID.		CH# FREQUENCY																												
6. TOTAL RADIOS REQUIRED																															

7. PREPARED BY (NAME/POSITION)

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SUPPORT VEHICLE INVENTORY (Use separate sheet for each vehicle category)	1. Incident Name	2. Date Prepared	3. Time Prepared

Vehicle Category: ☐ Buses ☐ Dozers ☐ Engines ☐ Lowboys ☐ Pickups/Sedans ☐ Tenders ☐ Other

4. Vehicle/Equipment Information

Resource Order No. "E" Number	Incident ID No.	Vehicle Type	Vehicle Make	Capacity Size	Agency/Owner	Vehicle License Rig Number	Location	Release Time

Page ___of ____	5. Prepared by (Ground Support Unit)

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Green Card Stock (Crew)

AGENCY	ST	KIND	TYPE	I.D. NO.

ORDER/REQUEST NO. | DATE/TIME CHECK IN

HOME BASE

DEPARTURE POINT

LEADER NAME

CREW ID NO./NAME (FOR STRIKE TEAMS)

NO. PERSONNEL	MANIFEST	WEIGHT
	☐ YES ☐ NO	

METHOD OF TRAVEL
☐ OWN ☐ BUS ☐ AIR

OTHER

DESTINATION POINT | ETA

TRANSPORTATION NEEDS
☐ OWN ☐ BUS ☐ AIR

OTHER

ORDERED DATE/TIME | CONFIRMED DATE/TIME

REMARKS

ICS 219-2 (Rev. 4/82) CREW NFES 1344

AGENCY	TF	KIND	TYPE	I.D. NO./NAME

INCIDENT LOCATION | TIME

STATUS
☐ ASSIGNED ☐ O/S REST ☐ O/S PERS.
☐ AVAILABLE ☐ O/S MECH ☐ ETR

NOTE

INCIDENT LOCATION | TIME

STATUS
☐ ASSIGNED ☐ O/S REST ☐ O/S PERS.
☐ AVAILABLE ☐ O/S MECH ☐ ETR

NOTE

INCIDENT LOCATION | TIME

STATUS
☐ ASSIGNED ☐ O/S REST ☐ O/S PERS.
☐ AVAILABLE ☐ O/S MECH ☐ ETR

NOTE

INCIDENT LOCATION | TIME

STATUS
☐ ASSIGNED ☐ O/S REST ☐ O/S PERS.
☐ AVAILABLE ☐ O/S MECH ☐ ETR

NOTE

*U.S. GPO: 1990-794-001

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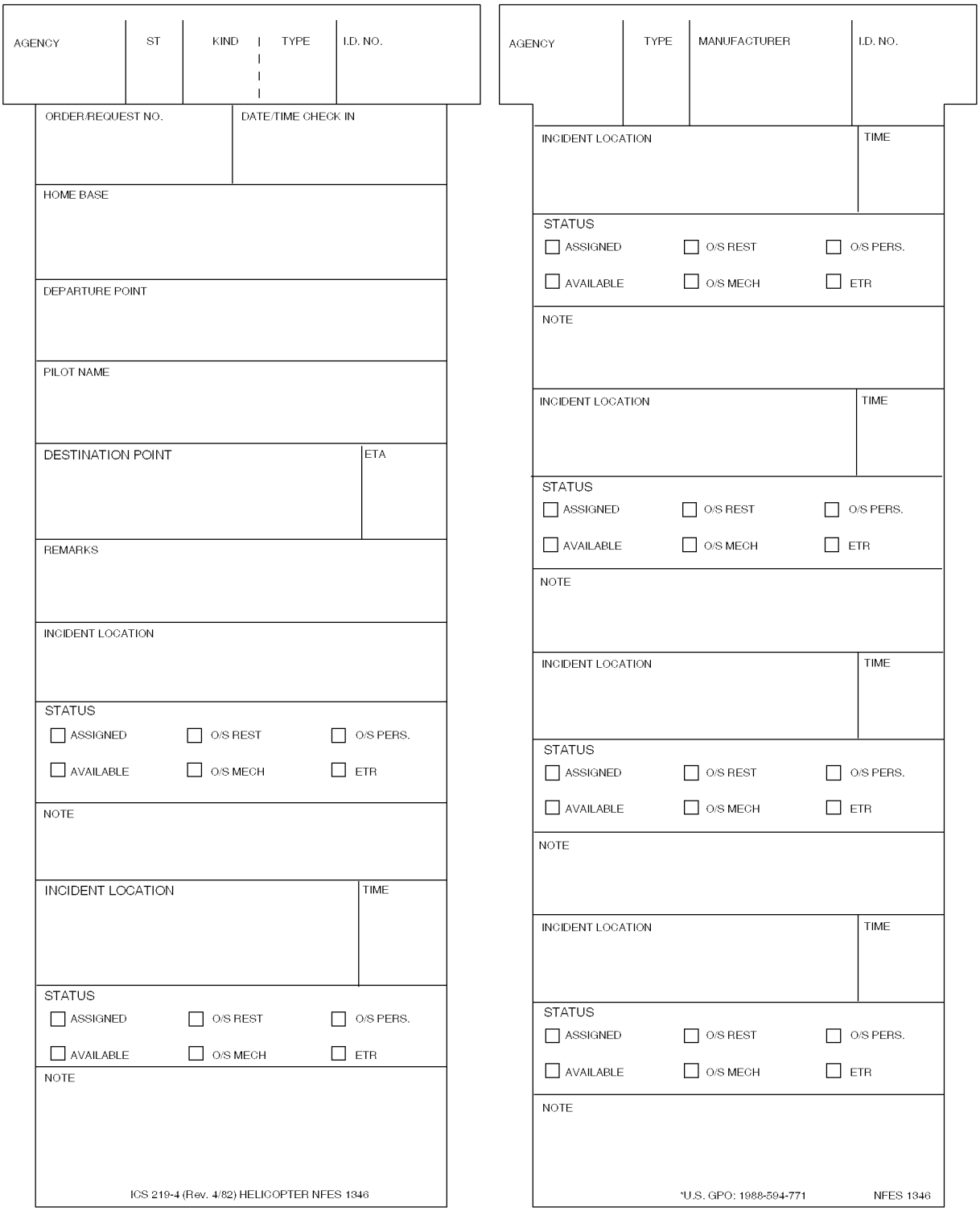
Blue Card Stock (Helicopter)



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Orange Card Stock (Aircraft)

AGENCY	TYPE	MANUFACTURER	I.D. NO.

ORDER/REQUEST NO.	DATE/TIME CHECK IN

HOME BASE

DATE TIME RELEASED

INCIDENT LOCATION	TIME

STATUS

☐ ASSIGNED ☐ O/S REST ☐ O/S PERS.

☐ AVAILABLE ☐ O/S MECH ☐ ETR

NOTE

INCIDENT LOCATION	TIME

STATUS

☐ ASSIGNED ☐ O/S REST ☐ O/S PERS.

☐ AVAILABLE ☐ O/S MECH ☐ ETR

NOTE

INCIDENT LOCATION	TIME

STATUS

☐ ASSIGNED ☐ O/S REST ☐ O/S PERS.

☐ AVAILABLE ☐ O/S MECH ☐ ETR

NOTE

ICS 219-6 (4/82) AIRCRAFT

AGENCY	TYPE	MANUFACTURER NAME/NO.	I.D. NO.

INCIDENT LOCATION	TIME

STATUS

☐ ASSIGNED ☐ O/S REST ☐ O/S PERS.

☐ AVAILABLE ☐ O/S MECH ☐ ETR

NOTE

INCIDENT LOCATION	TIME

STATUS

☐ ASSIGNED ☐ O/S REST ☐ O/S PERS.

☐ AVAILABLE ☐ O/S MECH ☐ ETR

NOTE

INCIDENT LOCATION	TIME

STATUS

☐ ASSIGNED ☐ O/S REST ☐ O/S PERS.

☐ AVAILABLE ☐ O/S MECH ☐ ETR

NOTE

INCIDENT LOCATION	TIME

STATUS

☐ ASSIGNED ☐ O/S REST ☐ O/S PERS.

☐ AVAILABLE ☐ O/S MECH ☐ ETR

NOTE

*U.S. GPO: 695-162-1986 NFES 1348

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Yellow Card Stock (Dozers)

AGENCY	ST TF	KIND | TYPE	I.D. NO.

ORDER/REQUEST NO. | DATE/TIME CHECK IN

HOME BASE

DEPARTURE POINT

LEADER NAME

RESOURCE ID. NO.S/NAMES

DESTINATION POINT | ETA

REMARKS

INCIDENT LOCATION | TIME

STATUS

☐ ASSIGNED ☐ O/S REST ☐ O/S PERS.

☐ AVAILABLE ☐ O/S MECH ☐ ETR

NOTE

ICS 219-7 (Rev. 4/82) DOZERS NFES 1349

AGENCY	ST TF	KIND | TYPE	I.D. NO.

INCIDENT LOCATION | TIME

STATUS

☐ ASSIGNED ☐ O/S REST ☐ O/S PERS.

☐ AVAILABLE ☐ O/S MECH ☐ ETR

NOTE

INCIDENT LOCATION | TIME

STATUS

☐ ASSIGNED ☐ O/S REST ☐ O/S PERS.

☐ AVAILABLE ☐ O/S MECH ☐ ETR

NOTE

INCIDENT LOCATION | TIME

STATUS

☐ ASSIGNED ☐ O/S REST ☐ O/S PERS.

☐ AVAILABLE ☐ O/S MECH ☐ ETR

NOTE

INCIDENT LOCATION | TIME

STATUS

☐ ASSIGNED ☐ O/S REST ☐ O/S PERS.

☐ AVAILABLE ☐ O/S MECH ☐ ETR

NOTE

*U.S. GPO: 1990-794-006

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AIR OPERATIONS SUMMARY		1. Incident Name		2.Operational Period (Date & Time)	3. Distribution Helibases Fixed Wing Bases
4. Personnel and Communications	Name	Air/Air Frequency	Air/Ground Frequency	5. Remarks (Spec. Instructions, Safety Notes, Hazards, Priorities)	
Air Operations Director					
Air Attack Supervisor					
Helicopter Coordinator					
Air Tanker Coordinator					

6. Location/Function	7. Assignment	8. Fixed Wing		9. Helicopters		10. Time		11. Aircraft Assigned	12. Operating Base
		No.	Type	No.	Type	Available	Commence		
13. Totals									

14. Air Operations Support Equipment	15. Prepared by *(include Date and Time)*

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DEMOBILIZATION CHECKOUT

ICS-221

1. INCIDENT NAME/NUMBER	2. DATE/TIME	3. DEMOB NO.

4. UNIT/PERSONNEL RELEASED

5. TRANSPORTATION TYPE/NO.

6. ACTUAL RELEASE DATE/TIME

7. MANIFEST YES NO

NUMBER _____

8. DESTINATION

_____

9. AREA/AGENCY/REGION NOTIFIED

NAME _____

DATE _____

10. UNIT LEADER RESPONSIBLE FOR COLLECTING PERFORMANCE RATING

11. UNIT/PERSONNEL YOU AND YOUR RESOURCES HAVE BEEN RELEASED SUBJECT TO SIGNOFF FROM THE FOLLOWING:

(DEMOB. UNIT LEADER CHECK ✓ APPROPRIATE BOX)

LOGISTICS SECTION

☐ SUPPLY UNIT _____

☐ COMMUNICATIONS UNIT _____

☐ FACILITIES UNIT _____

☐ GROUND SUPPORT UNIT LEADER _____

PLANNING SECTION

☐ DOCUMENTATION UNIT _____

FINANCE/ADMINISTRATION SECTION

☐ TIME UNIT _____

OTHER

☐ _____ _____

☐ _____ _____

12. REMARKS

_____

_____

221 ICS 1/83	

NFES 1353

INSTRUCTIONS ON BACK

January 1, 1983 ICS-221

INSTRUCTIONS FOR COMPLETING THE DEMOBILIZATION CHECKOUT
(ICS FORM 221)

Prior to actual demobilization, Planning Section (Demobilization Unit) should check with the Command Staff (Liaison Officer) to determine any agency specific needs related to demobilization and release. If any, add to line Number 11.

Item Number	Item Title	Instructions
1.	Incident Name/No.	Print Name and/or Number of incident.
2.	Date/Time	Enter Date and Time prepared.
3.	Demob No.	Enter Agency Request Number, Order Number, or Agency Demobilization Number if applicable.
4.	Unit/Personnel Released	Enter appropriate vehicle or Strike Team/Task Force I.D. Number(s) and Leader's name or individual over-head or staff personnel being released.
5.	Transportation Type/No.	Method and vehicle I.D. Number for transportation back to home unit. Enter N/A if own transportation is provided. *Additional specific details should be included in Remarks, block #12.
6.	Actual Release Date/time	To be completed at conclusion of demobilization at time of actual release from incident. Would normally be last item of form to be completed.
7.	Manifest	Mark appropriate box. If yes, enter manifest number. Some agencies require a manifest for air travel.
8.	Destination	Location to which Unit or personnel have been released, i.e., Area, Region, Home base, Airport, Mobilization Center, etc.
9.	Area/Agency/ Region Notified	Identify Area, Agency, or Region notified and enter date & time of notification.
10.	Unit Leader Responsible for Collecting Performance Ratings	Self-explanatory. Note, not all agencies require these ratings.
11.	Unit/Personnel	Demobilization Unit Leader will identify with a check in the box to the left of those units requiring check-out. Identified Unit Leaders are to initial to the right to indicate release. Blank boxes are provided for any additional check (unit requirements as needed), i.e., Safety Officer, Agency Representative, etc.
12.	Remarks	Any additional information pertaining to demobilization or release.

*GPO 1985-0-593-005/14032

INDIVIDUAL PERFORMANCE RATING

INSTRUCTIONS: The immediate supervisor will prepare this form for a subordinate person. Rating will be reviewed with the individual who will sign and date the form. The completed rating will be given to the Planning Section Chief before the rater leaves the incident.

1. NAME	2. INCIDENT NAME AND NUMBER	START DATE OF INCIDENT

3. HOME UNIT ADDRESS	4. INCIDENT AGENCY AND ADDRESS

5. POSITION HELD ON INCIDENT	6. TRAINEE POSITION	7. INCIDENT COMPLEXITY	8. DATE OF ASSIGNMENT
	☐ YES ☐ NO	☐ I ☐ II ☐ III	FROM: TO:

9. List the main duties from the Position Checklist, on which the position will be rated. Enter X under the appropriate column indicating the individuals level of performance for each duty listed.	PERFORMANCE LEVEL				
	Did not apply on this incident	Unacceptable	Need to Improve	Fully Successful	Exceeds Successful
	EXPLAIN IN REMARKS				

10. REMARKS

11. THIS RATING HAS BEEN DISCUSSED WITH ME (Signature of individual being rated.)	12. DATE

13. RATED BY (Signature)	14. HOME UNIT	15. POSITION HELD ON THIS INCIDENT	16. DATE

*U.S. GPO: 1991-594-696/40141

NFES 2074 ICS FORM 226 (6/89)

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INCIDENT/PROJECT ORDER NUMBER

RESOURCE ORDER

INITIAL DATE/TIME

2. INCIDENT/PROJECT NAME

3. INCIDENT /PROJECT ORDER NUMBER

4. OFFICE REFERENCE NUMBER

5. DESCRIPTIVE LOCATION/RESPONSE AREA

6. SEC. | TWN | RNG | Base MDM

7. MAP REFERENCE

8. INCIDENT BASE/PHONE NUMBER

9. JURISDICTION/AGENCY

10. ORDERING OFFICE

11. AIRCRAFT INFORMATION

LAT.

LONG.

BEARING	DISTANCE	BASE OR OMNI	AIR CONTACT	FREQUENCY	Ground Contact	FREQUENCY	RELOAD BASE	OTHER AIRCRAFT/HAZARDS

12. Request Number	Ordered Date/Time	From / To	Q T Y	RESOURCE REQUESTED	Needed Date/Time	Deliver To	To / From	Time	Agency ID	RESOURCE ASSIGNED	ETD / ETA	RELEASED Date	RELEASED To	Time / ETA

13. ORDER RELAYED Req. No.	Date	Time	To/From	ACTION TAKEN	ORDER RELAYED Req. No.	Date	Time	To/From	ACTION TAKEN

ICS 259-3 (7/87) NFES 2202

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INCIDENT/PROJECT ORDER NUMBER: I D - 0 3 - E 6 1 2 3 4

RESOURCE ORDER

Personnel

INITIAL DATE/TIME: 04-05-03

2. INCIDENT/PROJECT NAME: Mormon Cricket #1

3. INCIDENT /PROJECT ORDER NUMBER: 10-03-E6-1234

4. OFFICE REFERENCE NUMBER: USDA-APHIS-I4

5. DESCRIPTIVE LOCATION/RESPONSE AREA: Southern Elmore County

6. SEC. | TWN | RNG | Base MDM

7. MAP REFERENCE

8. INCIDENT BASE/PHONE NUMBER: 208-123-4567

9. JURISDICTION/AGENCY ID - Dept. of Ag.

10. ORDERING OFFICE ID - Dept. of Ag.

11. AIRCRAFT INFORMATION | LAT. | LONG.

BEARING	DISTANCE	BASE OR OMNI	AIR CONTACT	FREQUENCY	Ground Contact	FREQUENCY	RELOAD BASE	OTHER AIRCRAFT/HAZARDS

12. Request Number	Ordered Date/Time	From / To	Q T Y	RESOURCE REQUESTED	Needed Date/Time	Deliver To	To / From	Time	Agency ID	RESOURCE ASSIGNED	ETD / ETA	RELEASED Date	RELEASED To	Time / ETA
0-1	04/05 1000	10 M. Smith/ T. Able	1	Entomologist	04-07 1200	see action taken	T. Pole/ C. Davis	1030	PPQ 05	Bill Paxton	0800/ 1030			
0-2	04/05 1000	10 M. Smith/ T. Able	1	Entomologist	04-07 1200	see action taken	T. Pole/ C. Davis	1030	PPQ 06	Martha Hill	0800/ 1030			
0-3	04/06 1300	10 T. Fray/ T. Able	1	Operations S.C.	04-08 0800	ICP	T. Pole/ C. Davis	1310	PPQ 25	Brent Woods	4-7 1500/ 4-7 1900			

13. ORDER RELAYED Req. No.	Date	Time	To/From	ACTION TAKEN	ORDER RELAYED Req. No.	Date	Time	To/From	ACTION TAKEN
0-1/2	04/05	1030	T. Pole/C. Davis	Request filled. ETA 04-07					Will be met in BOI by Kelly
				1030 UA 235 departs LAX					Phone#: 208-344-7825.
				0800 arrives BOI 1100. Plane.		04/05	1030	M. Smith/T.Pole	Relayed. Confirmed phone #.

ICS 259-3 (7/87) NFES 2202

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CONTINUATION SHEET NO._____ OF _____

Order No.	**RESOURCE ORDER**	2. INCIDENT/PROJECT NAME	3. INCIDENT /PROJECT ORDER NUMBER	4. OFFICE REFERENCE NUMBER

12. Request Number	Ordered Date/Time	From / To	Q T Y	RESOURCE REQUESTED	Needed Date/Time	Deliver To	To / From	Time	Agency ID	RESOURCE ASSIGNED	ETD / ETA	RELEASED Date	RELEASED To	Time / ETA

NFES 2203 (7/87)

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APPENDIX L
2005-09-05 HURRICANE KATRINA INCIDENT ACTION PLAN

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Department of Homeland Security
Incident Support Team

Hurricane Katrina Incident Action Plan

Operational Period: 0700 09/05/05 - 0700 09/06/05

IST Base of Operations
5800 Airline Drive
New Orleans, LA 70112
800-311-0947 (Phone)

Incident Name	Operational Period (Date/T5ime)	INCIDENT OBJECTIVES ICS 202
Hurricane Katrina	From: 2005-09-05 07:00 To: 2005-09-06 07:00	

Overall Incident Objective(s)

1. Perform search and rescue operations in support of local, state and federal assets.
2. Provide ESF-9 operations capabilities as requested by appropriate sources
3. Establish and maintain communications channels for Federal US&R operational requests
4. Provide support for deployed ESF-9 resources as necessary
5. Ensure health and safety of all ESF-9 responders

Safety Message for Specified Operational Period

See attached.

Weather:

Monday: Partly cloudy with 20 percent chance of thunderstorms. Highs around 90, East winds 10-15 mph

Monday Night: Partly cloudy with 20 percent chance of thunderstorms. Lows in the lower 70s. East winds 10-15 mph.

Time of Sunrise: 06:38 Hours **Time of Sunset:** 19:18 Hours

Attachments (mark "X" if attached)

☒ Organization List (ICS 203)	☒ Medical Plan (ICS 206)	☐ Resources at Risk Summary (ICS 232)
☒ Assignment List (ICS 204)	☐ Incident Map(s)	☒ Safety Plan
☒ Communications List (ICS 205)	☐ Traffic Plan	☐ Weather Statement

Prepared by: (Planning Section Chief) Dan Hudson **Date/Time:** September 4, 2005 19:00 Hours

Approved by: (Incident Commander) Jim Strickland

ORGANIZATION ASSIGNMENT LIST		1. INCIDENT NAME Hurricane Katrina FEMA-1603-DR-LA	2. DATE PREPARED 09/05/05	3. TIME PREPARED 01:40
5. UNIFIED COMMAND		**4. OPERATIONAL PERIOD (DATE/TIME)**		
AGENCY	NAME	09/04/2005 0700 hours to 09/05/2005 0700 hours		
FEMA	Dave Webb	**9. OPERATIONS SECTION**		
USCG	Shannon Gilreath	CHIEF	Paul Bailey	
LDWF	Brian Spillman	DEPUTY	Mike Brown	
JPSD	Fred Williams	**CENTRAL CITY BRANCH**		
6. COMMAND STAFF		BRANCH DIRECTOR	Dominic Marzano	
SAFETY OFFICER	Don Shawver	INDUSTRIAL WEST DIV.	MO-TF1/CA-TF5,6,7,8	
SAFETY OFFICER DEP	Norman/Martinez, B	INDUSTRIAL EAST DIV.	TN-TF1/USFW	
INFORMATION OFFICER	Daniel Martinez	ROBERTSON DIVISION	TX-TF1/TXGLO	
LIAISON OFFICER	Rick Helton	**NORTH BRANCH**		
7. PLANNING SECTION		BRANCH DIRECTOR	Ruben Almaguer	
CHIEF	Dan Hudson	UNIVERSITY DIVISION	CO-TF1/EPA	
DEPUTY	Scott Olsen	MARIN DIVISION	NM-TF1/EPA	
RESOURCE UNIT	Tom Richardson	DOWNMAN DIVISION	AZ-TF1/FL-TF1/USCG	
SITUATION UNIT	Rich Leap			
SITUATION UNIT DEP	Jim Scott	**SOUTHEAST BRANCH**		
DOCUMENTATION UNIT		BRANCH DIRECTOR	Gerald George	
STRUCTURAL SPEC	Dennis Clark	LOWER NINTH	CA-TF1/CA-TF2	
STRUCTURAL SPEC	John Osteraas			
WMD HAZMAT SPEC	Vasques/Castro	**SPECIAL OPS**	CA-TF3-4	
IST US&R SPEC				
IST US&R SPEC				
IST US&R SPEC				
8. LOGISTICS SECTION		**10. ADMIN SECTION**		
CHIEF	Rick McKinney	CHIEF		
DEPUTY	Alan Arrollado	PROCUREMENT UNIT		
SUPPLY UNIT	Wayne Black	APO	Melanie Coffelt	
ORDERING MANAGER	Mel Mathias	CONTRACT PROCUREMENT	David Orris Patryk Drozd	
FACILITIES UNIT	Angel Delafuente			
FACILITIES UNIT DEP	Mel Mathias			
BASE CAMP MANAGER	Larry			
GROUND SUPPORT				
FOOD UNIT	Jessica Wyman			
TRANS. UNIT	Dallas Lipp			
POA MOB UNIT	Bob McKee			
COMM UNIT	Pete Friedman			
COMM UNIT DEP	Billy Freeman			
MEDICAL UNIT	Mike Olinger			
MEDICAL DEP	Ken Miller			
ICS 203	11. PREPARED BY (RESOURCE UNIT) Tom Richardson			

1. Incident Name	2.Operational Period	**DIVISION ASSIGNMENT LIST**
Hurricane Katrina	Date: September 5-6, 2005 Time: 07:00 hrs to 07:00 hrs	**ICS 204** **DOWNMAN DIVISION**

3.Branch	4. Branch Director
North Branch	Ruben Almaguer

5. Operations Personnel			
IST Leader	Jim Strickland	Operations Section Chief	Paul Bailey/Mike Brown

6. Resources Assigned this Period

Resource Designator	Leader	Number Persons	Assigned Location	Vessels Assigned	Drop Off PT./Time	Pick Up PT./Time
FL-TF1 Type III	David Downey	34			0700	1600
AZ-TF1 Type I	Kreis Steve	80				
USCG				6		

7. Control Operations

1. Perform search and rescue operations in your branch utilizing the following search methods (in the following sequence):
   a.. First, perform hasty search/recon of your assigned branch. Perform rescue operations as needed.
   b. Second, perform a primary search of your branch utilizing physical, canine and audible search techniques. Perform rescue operations as needed.
2. Assist with extraction of evacuees as needed.

8. Special Instructions

1. Prepare and have available appropriate equipment for forcible roof entry operations.
2. When involved in flood water operations – Stay out of the water!
3. Wear appropriate PPE for working environment.
4. All TFL`s ensure that no ESF-9 assess engage in operations for which they have not received appropriate credentialed training.
5. Treat all water as a potential hazardous material. Decon appropriately if you inadvertently enter flood waters.
6. Monitor and evaluate situations closely – There are looters in the area and they have weapons!
7. All task forces are to send all task force members to support rescue and humanitarian missions.

9. Division/Group Communication Summary

Function	Frequency	System	Channel	Function	Frequency	System	Channel
Command Rptr			Z5 Ch2	Logistics Rptr			
Operations Rptr				Tactical (Specific to TF)			(TF Specific)

Prepared by (Resource Unit Leader)	Approved by (Planning Section Chief)	Date	Time
Tom Richardson	Dan Hudson	September 5, 2005	01:20 Hours

Incident Name	Operational Period	
Hurricane Katrina	Date: September 5-6, 2005 Time: 07:00 hrs to 07:00 hrs	**Central City Branch** **Industrial East Division**

Operations Personnel	
Operations Section Chief	Paul Bailey / Mike Brown
Branch Director	Dominic Marzano
Division Supervisor	Dave Williams
New Orleans Fire Department Liaison	Jamie Lampard

6. Resources Assigned this Period

Resource Designator	Leader	Number	Boats Assigned	Drop Off PT./Time	Pick Up PT./Time
TN-TF1 Type III	John Selberg	34		0700	1800
USFW		15		0700	1800

7. Control Operations

1. Perform search and rescue operations in your branch utilizing the following search methods (in the following sequence):
   a.. First, perform hasty search/recon of your assigned branch. Perform rescue operations as needed.
   b. Second, perform a primary search of your branch utilizing physical, canine and audible search techniques. Perform rescue operations as needed.
2. Assist with the extraction of evacuees.

8. Special Instructions

1. Prepare and have available appropriate equipment for forcible roof entry operations.
2. When involved in flood water operations – Stay out of the water!
3. Wear appropriate PPE for working environment.
4. Treat all water as a potential hazardous material. Decon appropriately if you inadvertently enter flood waters.

9. Division/Group Communication Summary

Function	Frequency	System	Channel	Function	Frequency	System	Channel
Command Rptr			Z5 Ch2	Logistics Rptr			
Operations Rptr				Tactical (Specific to TF)			(TF Specific)

Prepared by (Resource Unit Leader)	Approved by (Planning Section Chief)	Date	Time
Tom Richardson	Dan Hudson	September 5, 2005	00:59 Hours

Incident Name	Operational Period	
Hurricane Katrina	Date: September 5-6, 2005 Time: 07:00 hrs to 07:00 hrs	**Central City Branch** **Industrial West Division**

Operations Personnel	
Operations Section Chief	Paul Bailey / Mike Brown
Branch Director	Dominic Marzano
Division Supervisor	Doug Westhoff
New Orleans Fire Department Liaison	Jamie Lampard

6. Resources Assigned this Period

Resource Designator	Leader	Number	Boats Assigned	Drop Off PT./Time	Pick Up PT./Time
MO-TF1	Doug Westhoff	35		0700	1800
CA-TF5	Michael Boyle	14	2	"	"
CA-TF6	Dave Lesh	14	2	"	"
CA-TF7	Jay Bowdler	14	2	"	"
CA-TF8	Dave Williams	14	2	"	"

7. Control Operations

1. Perform search and rescue operations in your branch utilizing the following search methods (in the following sequence):
   a.. First, perform hasty search/recon of your assigned branch. Perform rescue operations as needed.
   b. Second, perform a primary search of your branch utilizing physical, canine and audible search techniques. Perform rescue operations as needed.
2. Assist with the extraction of evacuees.

8. Special Instructions

1. Prepare and have available appropriate equipment for forcible roof entry operations.
2. When involved in flood water operations – Stay out of the water!
3. Wear appropriate PPE for working environment.
4. Treat all water as a potential hazardous material. Decon appropriately if you inadvertently enter flood waters.
5. Watch possible rail car leakage. A number of cars off track.

9. Division/Group Communication Summary

Function	Frequency	System	Channel	Function	Frequency	System	Channel
Command Rptr			Z5 Ch2	Logistics Rptr			
Operations Rptr				Tactical (Specific to TF)			(TF Specific)

Prepared by (Resource Unit Leader)	Approved by (Planning Section Chief)	Date	Time
Tom Richardson	Dan Hudson	September 5, 2005	00:59 Hours

Incident Name	Operational Period	
Hurricane Katrina	Date: September 5-6, 2005 Time: 07:00 hrs to 07:00 hrs	**Southeast Branch** **Lower Ninth Division**

Operations Personnel	
Operations Section Chief	Paul Bailey / Mike Brown
Branch Director	Gerald George
Division Supervisor	Ishmaal Messer
New Orleans Fire Department Liaison	Pat Ball

6. Resources Assigned this Period

Resource Designator	Leader	Number	Boats Assigned	Drop Off PT./Time	Pick Up PT./Time
CA-TF1 SWRT	Jack Wise	14	2	0700	1800
CA-TF2 SWRT	Scott Smith	14	2	0700	1800

7. Control Operations

1. Perform search and rescue operations in your branch utilizing the following search methods (in the following sequence):
   a.. First, perform hasty search/recon of your assigned branch. Perform rescue operations as needed.
   b. Second, perform a primary search of your branch utilizing physical, canine and audible search techniques. Perform rescue operations as needed.
2. Assist with the extraction of evacuees.

8. Special Instructions

1. Prepare and have available appropriate equipment for forcible roof entry operations.
2. When involved in flood water operations – Stay out of the water!
3. Wear appropriate PPE for working environment.
4. Treat all water as a potential hazardous material. Decon appropriately if you inadvertently enter flood waters.
5. Monitor and evaluate situations closely – They have weapons!

9. Division/Group Communication Summary

Function	Frequency	System	Channel	Function	Frequency	System	Channel
Command Rptr			Z5 Ch2	Logistics Rptr			
Operations Rptr				Tactical (Specific to TF)			(TF Specific)

Prepared by (Resource Unit Leader)	Approved by (Planning Section Chief)	Date	Time
Tom Richardson	Dan Hudson	September 4, 2005	23:59 Hours

1. Incident Name	2.Operational Period	**DIVISION ASSIGNMENT LIST**
Hurricane Katrina	Date: September 5-6, 2005 Time: 07;00 hrs to 07;00 hrs	**ICS 204** **MARIN DIVISION**

Operations Personnel

3 .Operations Section Chief	4. Branch Director
Paul Bailey/Mike Brown	Ruben Almaguera
5. Division Supervisor	5. New Orleans Fire Department Liaison
James Breen – Marin Division	Condon

6. Resources Assigned this Period

Resource Designator	Leader	Number	Vehicles Assigned	Drop Off PT./Time	Pick Up PT./Time
NM-TF1 Type I		70		0700	1700
EPA Boat Team		10		0700	1700

7. Control Operations

1. Perform search and rescue operations in your branch utilizing the following search methods (in the following sequence):
   a.. First, perform hasty search/recon of your assigned branch. Perform rescue operations as needed.
   b. Second, perform a primary search of your branch utilizing physical, canine and audible search techniques. Perform rescue operations as needed.
2. Assist with extraction of evacuees as needed.
3. Mark all structures searched.

8. Special Instructions

1. Prepare and have available appropriate equipment for forcible roof entry operations.
2. When involved in flood water operations – Stay out of the water!
3. Wear appropriate PPE for working environment.
4. Treat all water as a potential hazardous material. Decon appropriately if you inadvertently enter flood waters.
5. Monitor and evaluate situations closely – There are looters in the area and they have weapons!

9. Division/Group Communication Summary

Function	Frequency	System	Channel	Function	Frequency	System	Channel
Command Rptr			Z5 Ch2	Logistics Rptr			
Operations Rptr				Tactical (Specific to TF)			(TF Specific)

Prepared by (Resource Unit Leader)	Approved by (Planning Section Chief)	Date	Time
Tom Richardson	Dan Hudson	September 5, 2005	0100 Hours

Incident Name	Operational Period	
Hurricane Katrina	Date: September 5-6, 2005 Time: 07:00 hrs to 07:00 hrs	**Central Branch** **Robertson Division**

Operations Personnel	
Operations Section Chief	Paul Bailey / Mike Brown
Branch Director	Dominic Marzano
Division Supervisor	Dave Fiero
New Orleans Fire Department Liaison	Reginald Kelly

6. Resources Assigned this Period

Resource Designator	Leader	Number	Boats Assigned	Drop Off PT./Time	Pick Up PT./Time
TX-TF1 Type I	Jeff Saunders	80		0700	1800
TXGLO	J.T. Ewing	16	7	0700	1800

7. Control Operations

1. Perform search and rescue operations in your branch utilizing the following search methods (in the following sequence):
   a.. First, perform hasty search/recon of your assigned branch. Perform rescue operations as needed.
   b. Second, perform a primary search of your branch utilizing physical, canine and audible search techniques. Perform rescue operations as needed.
2. Assist with the extraction of evacuees.

8. Special Instructions

1. Prepare and have available appropriate equipment for forcible roof entry operations.
2. When involved in flood water operations – Stay out of the water!
3. Wear appropriate PPE for working environment.
4. Treat all water as a potential hazardous material. Decon appropriately if you inadvertently enter flood waters.
5. Monitor and evaluate situations closely – There are looters in the area and they have weapons!

9. Division/Group Communication Summary

Function	Frequency	System	Channel	Function	Frequency	System	Channel
Command Rptr			Z5 Ch2	Logistics Rptr			
Operations Rptr				Tactical (Specific to TF)			(TF Specific)

Prepared by (Resource Unit Leader)	Approved by (Planning Section Chief)	Date	Time
Tom Richardson	Dan Hudson	September 5, 2005	23:59 Hours

1. Incident Name	2.Operational Period	**DIVISION ASSIGNMENT LIST**
Hurricane Katrina	Date: September 5-6, 2005 Time: 07:00 hrs to 07:00 hrs	**ICS 204** **UNIVERSITY DIVISION**

Operations Personnel

3 .Operations Section Chief	4. Branch Director
Paul Bailey/Mike Brown	Ruben Almaguera – North City Division
5. Division Supervisor	5. New Orleans Fire Department Liaison
Mike Good - University Division	Case

6. Resources Assigned this Period

Resource Designator	Leader	Number	Vehicles Assigned	Drop Off PT./Time	Pick Up PT./Time
CO-TF1 Type III		34		0700	1700
EPA Boat Team		10		0700	1700

7. Control Operations

1. Perform search and rescue operations in your branch utilizing the following search methods (in the following sequence):
   a.. First, perform hasty search/recon of your assigned branch. Perform rescue operations as needed.
   b. Second, perform a primary search of your branch utilizing physical, canine and audible search techniques. Perform rescue operations as needed.
2. Assist with the extraction of evacuees.
3. If encounter an area that has been searched, begin detailed search where possible.
4. Mark all structures searched.

8. Special Instructions

1. Prepare and have available appropriate equipment for forcible roof entry operations.
2. When involved in flood water operations – Stay out of the water!
3. Wear appropriate PPE for working environment.
4. Treat all water as a potential hazardous material. Decon appropriately if you inadvertently enter flood waters.
5. Monitor and evaluate situations closely – There are looters in the area and they have weapons!

9. Division/Group Communication Summary

Function	Frequency	System	Channel	Function	Frequency	System	Channel
Command Rptr			Z5 Ch2	Logistics Rptr			
Operations Rptr				Tactical (Specific to TF)			(TF Specific)

Prepared by (Resource Unit Leader)	Approved by (Planning Section Chief)	Date	Time
Tom Richardson	Dan Hudson	September 5, 2005	0100 Hours

INCIDENT RADIO COMMUNICATIONS PLAN	1. INCIDENT NAME Hurricane Katrina	2. DATE/TIME PREPARED 09-04-05 2300	3. OPERATIONAL PERIOD DATE/TIME 0700 09-05-05---0700 09-06-05

BASIC RADIO CHANNEL UTILIZATION

SYSTEM / CACHE	ZONE	CHANNEL	DISPLAY	FUNCTION	REMARKS
US&R	5	1	AUSAR1	Direct	Simplex of Zone 5,Ch 2
US&R	5	2	AUSAR2	**Repeater**	**Command Repeat and BOO to Work areas**
US&R	5	3	AUSAR3	Direct	Simplex of Zone 5, Ch 4
US&R	5	4	AUSAR4	**Repeater**	**Logistics Repeat – All non-command traffic (poor transmit from inside the IST)**
MOTF-1	5	13	AUSAR13	Tactical	Missouri TF, under control of the TF COML
Cal OES 1-4	3	1	FEMA1	Direct	California Strike Teams 1-4, under control of ST COML
US&R	5	10	AUSAR10	Repeater	Not assigned
TN TF-1	5	14	AUSAR14	Tactical	Tennessee TF under control of the TF COML
US&R	5	7	AUSAR7	Tactical	Simplex of Zone 5, Ch 8
US&R	5	8	AUSAR8	**Repeater**	**Boat operations – Mobile repeater mounted on FEMA tower truck at worksite**
TX TF-1	5	11	AUSAR11	Tactical	Texas TF, under control of the TF COML
US&R	5	15	CONVOY	Tactical	IST at BOO (Use Channel 2 for IST personnel off site)
NM TF-1	6	1	SOPS1	Tactical	New Mexico TF, under control of the TF COML
CO TF-1	6	3	SOPS3	Tactical	Colorado TF, under control of the TF COML
AZ TF-1	6	5	SOPS5	Tactical	Arizona TF, under control of the TF COML
FL TF-1	6	7	SOPS7	Tactical	Florida TF, under control of the TF COML

Continued on Page 2

INCIDENT RADIO COMMUNICATIONS PLAN Continued	1. INCIDENT NAME Hurricane Katrina	2. DATE/TIME PREPARED 09-04-05 2300	3. OPERATIONAL PERIOD DATE/TIME 0700 09-05-05---0700 09-06-05

BASIC RADIO CHANNEL UTILIZATION

SYSTEM / CACHE	ZONE	CHANNEL	DISPLAY	FUNCTION	REMARKS
Cal OES 5-8	3	3	FEMA 3	Tactical	California Strike Teams 5-8, under control of ST COML
US&R	5	6	AUSAR6	**Repeater**	**Portable repeater for Southeast Branch operations**
				5. PREPARED BY (COMMUNICATIONS UNIT) Billy Freeman Blue IST Comm	

Hurricane Katrina
Telephone/Email List

IST BLUE:	**IST Base of Operations**	**703-669-7859 (IST Plans)**	
	5900 Airline Drive	**703-669-7860 (IST Operations)**	
	New Orleans, LA 70112	**703-669-7858 (IST Communications)**	
		800-311-0947 (Satellite Phone)	

Name	Position	FEMA Cell	Personal Cell	Satellite Phone	Email	Room #
Arrollado, Allan	Transportation	202-285-1777	619-316-8666			
Bailey, Paul	Operations Chief	202-431-8868	702-466-9311	800-938-7828		
Black, Wayne	Logistics Dep	202-431-7488	757-435-4614			
Brown, Mike	Operations Dep	202-431-7209	757-286-5130			
Chesnutt, Jim	PIO – FEMA	720-635-8407	303-513-2389			
Coffelt, Melanie	APO - FEMA	540-974-1383				
Clark, Dennis	Structures Spec	202-431-7903	757-567-6006			
Covington, Jim	US&R SPEC	202-431-7246	901-486-2414	800-308-2240		
Deputy, Mark	POA/MOB					
Fraone, Frank	US&R SPEC	202-431-8966	650-743-3900			
Freeman, Billy	Comm Dep	202-431-8975	901-461-2902	800-934-0290		
Friedman, Peter	Comm Leader	202-431-7446	240-281-1717		flypigs1@yahoo.com	
Helton, Rick	Liaison Officer					
Hudson, Dan	Plans Chief	202-256-4684	253 377-7936 112*75*347		dhudson@co.pierce.wa.us	
Leap, Rich	Situation Status	202-431-7830	619-980-9781		raleap@aol.com	
Martinez, Dan	PIO - FEMA	202-431-7178	281-799-6565			
McBride, Scott						
McKee, Bob	POA MOB	202-431-8642	979-676-1622			
McKinney, Rick	Logistics Chief	202-431-8023	317-223-5153		M2481@indygov.org	
Miller, Ken	Medical Dep	202-431-8613	714-746-6531			
Nelson, Mark	Comm Specialist					
Olinger, Mike	Medical Officer	202-431-8817	317-691-5949		malinger@ivpui.edu	
Olsen, Scott	Plans Dep	202-431-8769	573-268-5942		scottaolsen@yahoo.com	
Shawver, Don	Safety	202-431-7327	626-437-6065			
Smalley, Peter	ESF9 Asst - FEMA	202-309-1962	202-498-8536			
Smith, Don	CDL Driver	202-431-7895				
Stober, Phil	US&R Specialist	202-431-7890	917-337-3281/917-854-8200		pstober@oem.nyc.gov	
Stojinski, Robert	CDL Driver	202-257-7982	240-832-6471			
Strickland, Jim	IST Leader	202-431-8940	703-599-5082		Jim.strickland@dhs.gov	

Hurricane Katrina
Telephone/Email List

Vasques, Ed	HAZMAT	202-431-8040	916-216-0290			
Webb, Dave	ESF9 Asst - FEMA	202-498-8877		888-854-7743	dave.webb@dhs.gov	
Welch, Troy						
Wilt, Darrel	US&R Specialist	202-431-8672	614-679-9797/937-414-6178		dwilt@ohtf1.com	
AZ-TF1:						
Name	Position	FEMA Cell	Personal Cell	Satellite Phone	Email	Room #
Kreis, Steve	TFL			877-209-4287		
BOO						
CA-OES:						
Hurley, Charley	CA-OES-01					
Messer, Ishmael	CA-OES-02					
CA-TF1:						
Name	Position	FEMA Cell	Personal Cell	Satellite Phone	Email	Room #
Wise, Jack	TFL					
BOO						
CA-TF2:						
Name	Position	FEMA Cell	Personal Cell	Satellite Phone	Email	Room #
Smith, Scott	TFL					
BOO						
CA-TF3						
Name	Position	FEMA Cell	Personal Cell	Satellite Phone	Email	Room #
Schapelhouman, Harold	TFL					
BOO						
CA-TF4						
Name	Position	FEMA Cell	Personal Cell	Satellite Phone	Email	Room #
Brown, Richard	TFL					

Hurricane Katrina
Telephone/Email List

BOO						
CA-TF5						
Name	Position	FEMA Cell	Personal Cell	Satellite Phone	Email	Room #
Boyle, Michael	TFL					
BOO						
CA-TF6						
Name	Position	FEMA Cell	Personal Cell	Satellite Phone	Email	Room #
Lesh, Dave	TFL					
BOO						
CA-TF7						
Name	Position	FEMA Cell	Personal Cell	Satellite Phone	Email	Room #
Bowdler, Jay	TFL					
BOO						
CA-TF8						
Name	Position	FEMA Cell	Personal Cell	Satellite Phone	Email	Room #
Williams, Dave	TFL					
BOO						
FL-TF1						
Name	Position	FEMA Cell	Personal Cell	Satellite Phone	Email	Room #
Downey, David	TFL			001-8816-3144-6964		
BOO				001-874-513-6405		
MO-TF1:						
Name	Position	FEMA Cell	Personal Cell	Satellite Phone	Email	Room #
Doug Westhoff	TFL		573-219-0679	254-381-1681	dwesthoff@bcfdmo.com	
BOO				800-588-4303		

Hurricane Katrina
Telephone/Email List

NM-TF1						
Name	Position	FEMA Cell	Personal Cell	Satellite Phone	Email	Room #
	TFL					
BOO						
TN-TF1:						
Name	Position	FEMA Cell	Personal Cell	Satellite Phone	Email	Room #
John Selberg	TFL		901-606-5060		jselberg@earthlink.net	
Nikcki, Paul	PTM		901-301-7962		pnicki@firehousemail.com	
BOO				877-765-0307		
TX-TF1:						
Name	Position	FEMA Cell	Personal Cell	Satellite Phone	Email	Room #
Jeff Saunders	TFL		979-229-3683	877-365-0162	jeff.saunders@teex.tamu.edu	
BOO				979-862-2823		
		Telephone				
IST - Logistics		703-669-7866				
		703-669-7867				
IST - Plans		703-669-7859				
		703-669-7860				
Command		703-669-7861				
Comm. Desk		703-669-7858				
Supply Store		703-669-7870				
MERS		727-450-8807				

Hurricane Katrina
Telephone/Email List

IMPORTANT NUMBERS						
Name	**Position**	**Telephone**	**Address**	**Cellular**	**Other**	
LA State EOC		225-925-7500	7667 Independence Blvd			
LA Wildlife Enf.	Command Post	254-460-9338				
Spillman, Brian	LA Wildlife Enforce	225-721-1144				
Daves, Sandy	LA Wildlife Enforce	524-214-3734				
Goatcher, Buddy	US Fish & Wildlife	337-280-1157				
Sayler, Michael	USACE	985-807-8705				
Schafer, Daryl	LCDR, USCG					
Fred Williams	Security/New Orleans Saints					
Eggler, Kevin Major		601-626-0121	Air Guard Power Unit			
Deshotel, Tommy	Fire Chief Jennings F.D.	337-821-5508	P.O. Box 1249 Jennings, LA 70546	337-532-7250	337-824-1293	
Wilson, Don	Field Supervisor Environmental Restoration LLC	636-227-7477	1666 Fabick Drive Fenton, MO 63026	314-280-4319		
Judic, Russ	Acadian EMS		337-291-1111 Dispatcher (C) 337-654-1500			
LA State Police		800-469-4828				
Joseph Lentini	LA Police Captain	225-925-4865	7919 Independence Blvd. Baton Rouge, LA 70806	504-202-5786	Fax 225-925-4822	
Kenner Police		504-468-7200				
John Linstrom	DMORT LNO	240-793-9964		760-497-6255	Email: john.linstrom@dhs.gov (goes to his Blackberry)	
USCG		225-289-2133				
NOFD	Fire Station 17	504-394-6949	De Gaulle & Woodland			
NOFD	Airport Station	504-464-3504 504-464-3505				
NOPD	French Quarter	504-565-7530	Royal & Conti Streets			
NOPD	Mid-City – 1st Dist.	504-565-7500	501 North Rampart St.			
NOPD	Uptown – 2nd Dist.					

Hurricane Katrina
Telephone/Email List

			IMPORTANT NUMBERS			
Name	**Position**	**Telephone**	**Address**	**Cellular**	**Other**	
Jeffers. Parish PD		504-376-2333				
MST	LSU Campus	225-578-0361				

ICS 205T Telephone List **Wednesday 09/03/2005**

Hurricane Katrina
Telephone/Email List

FEMA

FEDERAL EMERGENCY MANAGEMENT AGENCY
National Disaster Medical System
National Urban Search and Rescue Response System

MEDICAL PLAN	1. INCIDENT NAME Hurricane Katrina- New Orleans, LA	2. DATE PREPARED 9/4/05	3. TIME PREPARED 1730	4. OPERATIONAL PERIOD 0700 9/5-0700 9/6

5. INCIDENT MEDICAL AID STATIONS

MEDICAL AID STATIONS	LOCATION	PARAMEDICS	
		YES	NO
FEMA US&R IST Base of Operations	5901 Airline Dr. (SR 61), N.O., LA. N 29 58.462, W 90 11.712	MDs	
FEMA US&R Base of Operations	East Jefferson General Hospital Mobile Public Health Clinic vehicle adjacent to TX TF-1 BoO	MDs	

6. TRANSPORTATION

A. AMBULANCE SERVICES

NAME	ADDRESS	PHONE	PARAMEDICS	
			YES	NO
East Jefferson Parish EMS at East Jefferson Parish Hospital		911 or 504-349-5375 or 504-456-8149	X	
Acadian Ambulance/Air Ambulance		337-291-1111 or 337-654-1500	X	

B. INCIDENT AMBULANCES

NAME	LOCATION	PARAMEDICS	
		YES	NO
Austin-Travis County EMS	FEMA US&R IST Base of Operations	X	

7. HOSPITALS

NAME	ADDRESS	TRAVEL TIME		PHONE	HELIPAD		BURN CENTER	
		AIR	GRND		YES	NO	YES	NO
Ochsner Clinic Foundation Hospital	1514 Jefferson Hwy, SR 90, N.O., LA. [TASK FORCE MEMBERS]	-	5 min	504-842-5898 or 504-842-6939 or 504-842-3772		X	Level II trauma center	
East Jefferson General Hospital	N 30º 45" W 90º 40" Recommend S or W approach [Air Evac]		5 min	504-454-4377	X 20 Ton			X

8. MEDICAL EMERGENCY PROCEDURES

For emergencies call 911 or 7-digit numbers above, then call the US&R IST Medical Unit at 714-746-6531, or 202-431-8817, or call on zone 5 channel 2

For urgent or nonemergent US&R TF member medical problems call the US&R IST Medial Unit as above

Call the US&R IST Medical Unit with any Task Force member care documented on the US&R Injury & Illness Log

ICS 206 8-78	9. PREPARED BY (DEP. MEDICAL UNIT LEADER) Ken Miller MD PhD	10. REVIEWED BY (SAFETY OFFICER)

FEMA

FEDERAL EMERGENCY MANAGEMENT AGENCY
National Disaster Medical System
National Urban Search and Rescue Response System

Medical Plan ICS 206-A	1. INCIDENT NAME Hurricane Katrina-New Orleans, LA	2. DATE PREPARED 9/4/05	3. TIME PREPARED 1730
4. OPERATIONAL PERIOD 0700 9/5/05 – 0700 9/6/05			

Draft Supplemental Medical Plan-Recovery of Human Remains

Personal Protection and Protective Equipment

Hygiene
- Hand/face hygiene using antimicrobial aqueous wipes at site of operations
- Soap and water hand washing and shower at end of operational period
- Soap and water cleaning of equipment at end of operational period

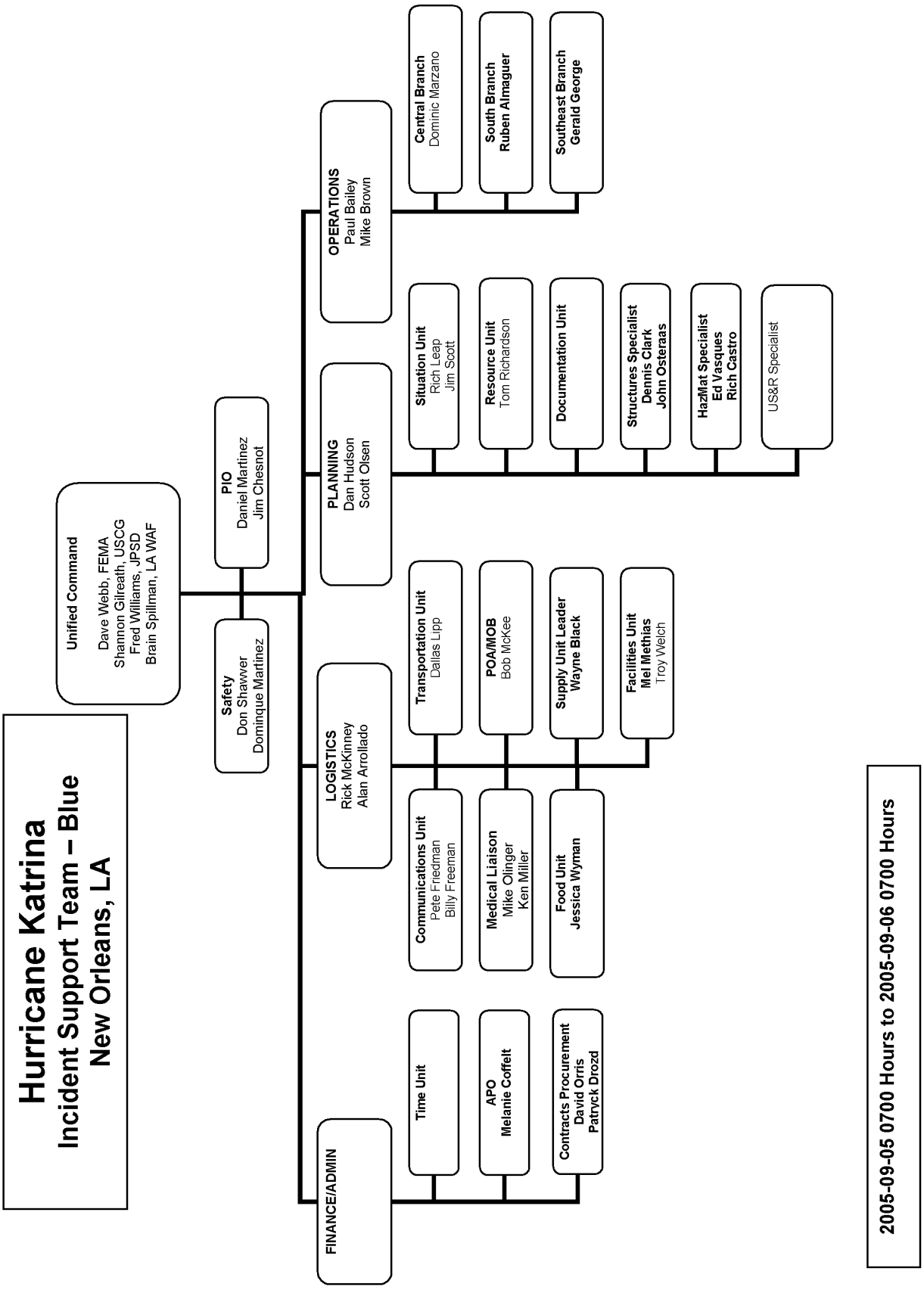
Contact Precautions (principle hazard)
- Latex/nitrile exam gloves under leather work gloves; leather gloves discarded after operational period
- Tyvek or equivalent overgarment (see below for operational precautions)

Respiratory Precautions
- Respiratory hazards are limited
- N-95 respirator is adequate protection

Tyvek (or equivalent) Overgarment & Respirator Environmental Safety
- Pre-operations hydration
- Monitor time in overgarment (idle and working)
- Plan for crew rotation
- Plan for crew rehab, cooling and hydration
- Limit time in N-95 respirator to operational needs (reduces respiratory heat loss)

Breach of Personal Protective Equipment
- Skin/mucosal irrigation with clean water or saline
- Saline irrigation of wound
- Antimicrobial aqueous wipe of skin around wound (not within wound), cover wound
- DoL CA-20

ICS 206-A


Hurricane Katrina
Incident Support Team – Blue
New Orleans, LA
Unified Command
Dave Webb, FEMA
Shannon Gilreath, USCG
Fred Williams, JPSD
Brain Spillman, LA WAF
Safety
Don Shawver
Dominque Martinez
PIO
Daniel Martinez
Jim Chesnot
PLANNING
Dan Hudson
Scott Olsen
Situation Unit
Rich Leap
Jim Scott
Resource Unit
Tom Richardson
Documentation Unit
Structures Specialist
Dennis Clark
John Osteraas
HazMat Specialist
Ed Vasques
Rich Castro
US&R Specialist
OPERATIONS
Paul Bailey
Mike Brown
Central Branch
Dominic Marzano
South Branch
Ruben Almaguer
Southeast Branch
Gerald George
LOGISTICS
Rick McKinney
Alan Arrollado
Transportation Unit
Dallas Lipp
POA/MOB
Bob McKee
Supply Unit Leader
Wayne Black
Facilities Unit
Mel Methias
Troy Welch
Communications Unit
Pete Friedman
Billy Freeman
Medical Liaison
Mike Olinger
Ken Miller
Food Unit
Jessica Wyman
FINANCE/ADMIN
Time Unit
APO
Melanie Coffelt
Contracts Procurement
David Orris
Patryck Drozd
2005-09-05 0700 Hours to 2005-09-06 0700 Hours

INCIDENT ACTION PLAN SAFETY ANALYSIS	1. Incident Name	2. Date	3. Time
	Hurricane Katrina	9-4-05	2000

LACES* Analysis of Tactical Applications
Lookouts Awareness **C**ommunications **E**scape routes **S**afety zones

Division/Group/Branch	Personnel Protective Equip.	Overhead Hazards	Trip/Fall Hazards	Utilities	Hydration/Fatigue	Power Tools/Equipment	Unstable Structure	Evacuees Transportation	Transportation	Base of Operations	**LACES Mitigations**	HAZARDOUS MATERIALS	TRANSPORTATION	COMMUNICATIONS	Technical Equipment	MULTI-AIRCRAFT	Co-Located Task Forces		Other Risk Mitigations
North City Branch	x	x		x	x		x				Proper PPE, Beware of possible energized utilities-Avoid, Right tool right job, Decon/wash hands, watch for local wildlife-remain on boat as much as possible-2-4 qts. Per hour for hydration	x	x	x		x	x		Decon, Drive speed limit, extra batteries, proper channels, comm.. with aircraft, know who you is working in your operational area-Loose Dogs
North City Branch								x			Make sure Evacuees are evacuated to a known location Follow Hydration Plan-2-4 quarts of water per hour-work rest as needed-watch your teams for signs of fatigue								Beware of loose dogs in your operational areas-Pit Bulls/Snakes
Central city Branch	x	x		x	x		x				Proper PPE, Beware of possible energized utilities, Follow Hydration Plan-2-4 Quarts per hour	x	x	x		x	x		Decon, Drive Speed Limit, extra batteries, proper channels, comm. with aircraft, know who is working in your operational area
Central City Branch								x			Make sure Evacuees are evacuated to a known location 235A/B Freeway Exit Housing Projects-Violent Evacuees-Hostile Evacuees-Gun Fire in the area-avoid								Loose Dogs in Operational Areas-Pit Bulls/Snakes
South City Branch	x	x		x	x		x				Proper PPE's, Maintain Situational Awareness, 2-4 Qrts. Per hour, work rest as needed-watch your teams for fatigue, Post look out if you enter a structure								Loose Dogs in Operational Area-Pit Bulls/Snakes
South East Branch								x			Make sure Evacuees are evacuated to known Location. Broken Petroleum Line-Avoid.	x	x			x	x		Decon, Drive speed Limit, Extra Batteries, Proper channels, Know who is working in your operational area
ALL											Watch for Extreme Down Drafts when operating around all Helos; Secure all Gear and your PPE's — 500' Min. from all helos-Keep Unit to Unit Radio Traffic off of Command CH.2								Do not approach aircraft unless instructed-No hanging of feet out side helo-Door must shut
ALL											Keep all roadways clear once boats have been deployed-Bring Shade-Watch for below surface hazards								Watch for signs of Heat Exhaustion, Follow Medical Plan if injury occurs

Prepared by (Name and Position)	Date Prepared: 9/4/05	Operational Period 9/5/05
Don Shawver/ Dave Norman IST Safety		(Date /Time 0700 TO 0700

FEDERAL EMERGENCY MANAGEMENT AGENCY
Emergency Support Function–9 -Incident Support Team
National Urban Search and Rescue Response System

SAFETY PLAN	1. INCIDENT NAME Hurricane Katrina	2. DATE PREPARED 09/04/05	3. TIME PREPARED 1900 hrs	4. OPS PERIOD 0700-1900 hrs

SAFETY PROCEDURES

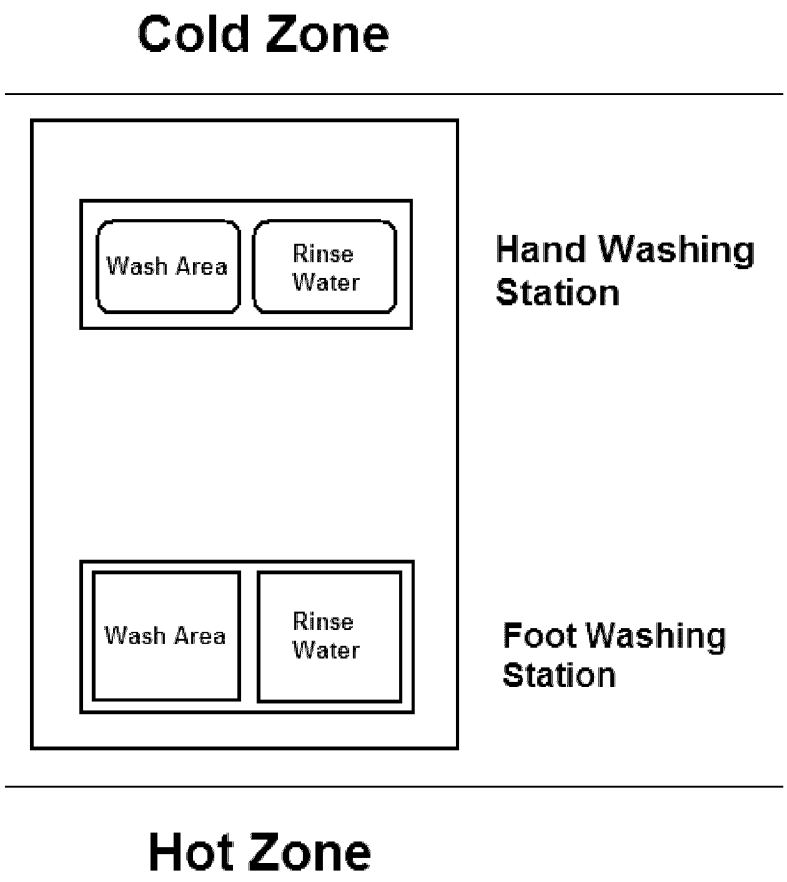
1. **Personal Safety**
   a. Ensure personnel accountability
   b. Maintain communications with deployed resources
   c. 500' Minimum from all Helocopters-Chinook Helos produce severe down drafts
   d. Maintain Proper Helospot Safety-Proper PPE's, Secure all loose gear and boats when deploying with a Helo asset- Communications-Eye to Eye-approach with caution-Look Up-Look Down-Look Around!!!!!
   e. Know what type of Helo is in your area-Have Contingency for Emergency Helospot
   f. Door must close when being transported by Helo-Nobody sitting on edge with door open
   g. Do Not approach Helo unless instructed too by Crew Chief/ Crew Member
2. **Hostile customers**
   a. Deploy law enforcement with TF operations
   b. Avoid looters, notify law enforcement / IST
   c. Be aware of your surroundings
3. **Personal Hygiene**
   a. HYDRATE: Before, during and after operational period
   a. Use hand sanitizer when water is not available
   b. Sunscreen and insect repellant!
      ☑ Reference Hurricane Katrina Personal Hygiene Plan
4. **Vehicle operations**:
   a. Uncontrolled intersections! Signals are out – make sure you have the right of way
   b. Several roads hazards exist, downed wires, debris in roadway and over head hazards
      ☑ (Wires, tree branches, etc) and standing water
5. **Hydration Plan-2-4 Quarts Per Hour-Watch for Signs Of Heat Exhaustion**
6. **If Serious Injury- Call for "EMERGENCY TRAFFIC" on Command and Tactical-State your Emergency, Type of Injury, Location, Type Of Transport Needed-To Division, Branch, Operations, IST Leader, Medical Unit Leader. Stay off the radio until "ALL CLEAR" is given by the IST Leader.**

9. PREPARED BY	10. REVIEWED BY
Don Shawver/Dave Norman, IST Safety	

ICS – Safety

HURRICANE KATRINA
Sanitation Hygiene Plan

Level 1 Hygiene Plan: designed for the usual exposures that personnel are exposed to during normal operations (mud, soils, concrete dust, etc).



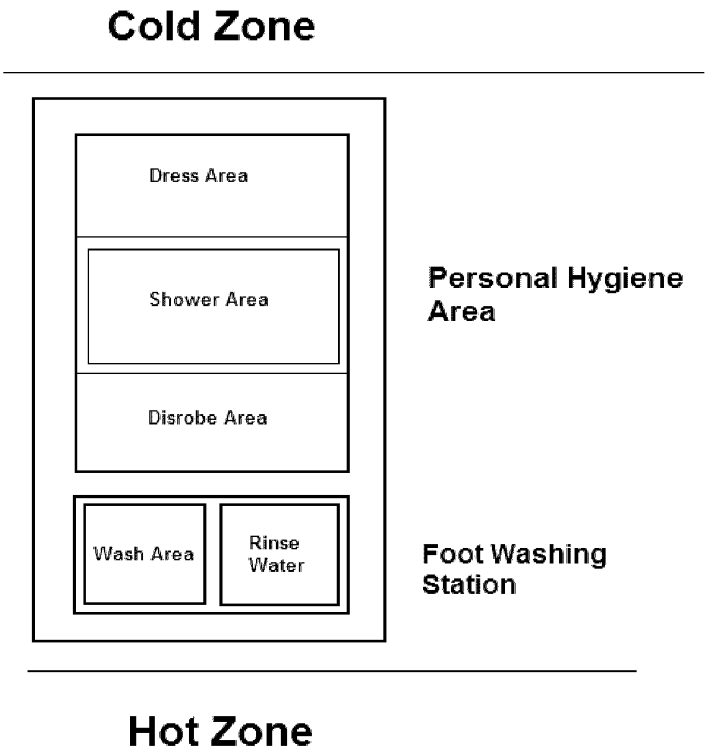
Foot Washing Needs:

- Brushes
- Soap (disinfectant type if available)
- Buckets or Kiddie pools (2)
- Water

Hand Washing Needs:

- Disinfectant type soap
- Water
- Basins, bowls or portable sinks
- Hand towels for drying
- Trash can or trash bags for disposal of hand towels

Level 2 Hygiene Plan: designed to accommodate exposures beyond the norm, to include hazardous materials, bloodborne pathogens, etc. (contact with contaminated water,etc)



Foot Washing Needs:

- Brushes
- Soap (disinfectant type if available)
- Buckets or Kiddie pools (2)
- Water
- Hand towels

Personal Hygiene Area Needs

- Privacy Curtain, shelter or tent
- Water source
- Soap (disinfectant type if available)
- Salvage Cover, poly sheeting, or tarp for ground cover
- Trash Bags for exposed uniforms
- Labels and pens to mark trash bags with owner's names
- Towels (in members clean set of uniforms if disposable towels unavailable)
- Personnel's clean set of uniforms
- Catch-all for water overflow
- Garden hoses and shower heads (or similar fashion)

APPENDIX M
2005-09-08 HURRICANE KATRINA INCIDENT ACTION PLAN

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Department of Homeland Security
Incident Support Team

Hurricane Katrina Incident Action Plan

Operational Period: 07:00 09/08/05 – 07:00 09/09/05

IST Base of Operations
5800 Airline Drive
New Orleans, LA 70112
800-311-0947 (Phone)

Incident Name	Operational Period (Date/T5ime)	INCIDENT OBJECTIVES ICS 202
Hurricane Katrina	From: 2005-09-08 07:00 To: 2005-09-09 07:00	

Overall Incident Objective(s)

1. Perform search and rescue operations in support of local, state and federal assets.
2. Provide ESF-9 operations capabilities as requested by appropriate sources
3. Establish and maintain communications channels for Federal US&R operational requests
4. Provide support for deployed ESF-9 resources as necessary
5. Ensure health and safety of all ESF-9 responders

Safety Message for Specified Operational Period

See attached.

Weather:

Thursday- Sunny , high 93 with a 20% chance of showers, winds from the NE at 10-15 mph.

Thursday Night: Clear, low 73 with winds from the NE at 5-10 mph

Statistics:

Citizens Assisted By FEMA US&R Assets

Evacuated:	9/7/2005:	46
	Total to Date:	6491
Shelter In Place:	9/7/2005:	74
	Total to Date:	1742

Time of Sunrise: 06:41 Hours **Time of Sunset:** 19:14 Hours

Attachments (mark "X" if attached)

☒ Organization List (ICS 203)	☒ Medical Plan (ICS 206)	☐ Resources at Risk Summary (ICS 232)
☒ Assignment List (ICS 204)	☐ Incident Map(s)	☒ Safety Plan
☒ Communications List (ICS 205)	☐ Traffic Plan	☐ Weather Statement

Prepared by: (Planning Section Chief) Dan Hudson **Date/Time:** September 7, 2005 21:00 Hours

Approved by: (Incident Commander) Jim Strickland

ORGANIZATION ASSIGNMENT LIST	1. INCIDENT NAME Hurricane Katrina FEMA-1603-DR-LA	2. DATE PREPARED 09/07/05	3. TIME PREPARED 23:00

5. UNIFIED COMMAND		4. OPERATIONAL PERIOD (DATE/TIME)	
AGENCY	NAME	09/08/2005 0700 hours to 09/09/2005 0700 hours	
FEMA	Dave Webb	**9. OPERATIONS SECTION**	
USCG	Shannon Gilreath	CHIEF	Paul Bailey
LDWF	Brian Spillman	DEPUTY	
JPSD	Fred Williams		
IST LEADER	Jim Strickland	**WEST BRANCH**	
DEPUTY IST LEADER	Gerry Brewster	BRANCH DIRECTOR	Dominic Marzano
6. COMMAND STAFF		WEST GOLF COURSE DIV.	Ron Dikes
SAFETY OFFICER	Don Shawver	EAST GOLF COURSE DIV.	Jim Power
SAFETY OFFICER DEP	Dave Norman	UNIVERSITY	Mike Esparza
INFORMATION OFFICER	Daniel Martinez	MARIN DIVISION	Perry Peake
LIAISON OFFICER	Rick Helton		
7. PLANNING SECTION			
CHIEF	Dan Hudson	**EAST BRANCH**	
DEPUTY	Scott Olsen	BRANCH DIRECTOR	Rubin Almangur
RESOURCE UNIT	Tom Richardson		
SITUATION UNIT	Rich Leap	MAYO DIVISION	CA-TF3 TFL
SITUATION UNIT DEP	Jim Scott	BUNDY DIVISION	H. Schapelhouman
DEMOBILIZATION UNIT	Joe McNeil	WRIGHT DIVISION	John Grana
STRUCTURAL SPEC	Dennis Clark	CHURCH DIVISION	Jack Wise
STRUCTURAL SPEC	John Osteraas		
WMD HAZMAT SPEC	Vasques/Castro		
IST US&R SPEC			
IST US&R SPEC		**SOUTH BRANCH**	
IST US&R SPEC		BRANCH DIRECTOR	Gerald George
8. LOGISTICS SECTION		PENINSULA DIVISION	
CHIEF	Rick McKinney	WAY SOUTH DIVISION	
DEPUTY	Alan Arrollado		
SUPPLY UNIT	Ian Morano		
ORDERING MANAGER	Mel Mathias		
FACILITIES UNIT	Angel Delafuente	**SPECIAL OPS**	Mark Hawkins
BASE CAMP MANAGER	Steve Hopkins		
GROUND SUPPORT		**10. ADMIN SECTION**	
FOOD UNIT	Jessica Wyman	CHIEF	
TRANS. UNIT	Dallas Lipp	PROCUREMENT UNIT	
POA MOB UNIT		APO	Melanie Coffelt
COMM UNIT	Pete Friedman	CONTRACT PROCUREMENT	David Orris Patryk Drozd
COMM UNIT DEP	Billy Freeman		
MEDICAL UNIT	Dario Gonzales		
MEDICAL DEP	Ken Miller		

ICS 203	11. PREPARED BY (RESOURCE UNIT) Tom Richardson

Incident Name	Operational Period	
Hurricane Katrina	Date: September 8-9, 2005 Time: 07:00 hrs to 07:00 hrs	**West Branch** **East Golf Course Division**

Operations Personnel	
Operations Section Chief	Paul Bailey
Branch Director	Dominic Marzano
Division Supervisor	Jim Power

6. Resources Assigned this Period

Resource Designator	Leader	Number	Boats Assigned	Drop Off PT./Time	Pick Up PT./Time
CA-TF2 US&R	Jim Power	80		0700	1600
Agency TBD			10	0700	1600

7. Control Operations

1. Perform search and rescue operations in your branch utilizing the following search methods (in the following sequence):
   a. Perform a 'primary search' by either making physical contact with the building and or having a clear view into all living spaces down to the floor level.
   b. After performing a 'primary search', building will be marked with standard US&R marking system. If only a partial area of the building was searched, it will be noted in the right side of the X (e.g. "ATTIC")
2. Assist with the extraction of evacuees.

8. Special Instructions

1. Prepare and have available appropriate equipment for forcible roof entry operations.
2. When involved in flood water operations – Stay out of the water!
3. Wear appropriate PPE for working environment.
4. Treat all water as a potential hazardous material. Decon appropriately if you inadvertently enter flood waters.
5. Monitor and evaluate situations closely – Individuals may be armed.
6. Utilize marking system.

9. Division/Group Communication Summary

Function	Frequency	System	Channel	Function	Frequency	System	Channel
Command Rptr			Z5 Ch2	Logistics Rptr			
Operations Rptr			Z5 Ch8	Tactical (Specific to TF)			Z 5 Ch 13

Prepared by (Resource Unit Leader)	Approved by (Planning Section Chief)	Date	Time
Tom Richardson	Dan Hudson	September 8, 2005	0000 Hours

Incident Name	Operational Period	
Hurricane Katrina	Date: September 8-9, 2005 Time: 07:00 hrs to 07:00 hrs	**West Branch** **West Golf Course Division**

Operations Personnel	
Operations Section Chief	Paul Bailey
Branch Director	Dominic Marzano
Division Supervisor	Ron Dykes

6. Resources Assigned this Period

Resource Designator	Leader	Number	Boats Assigned	Drop Off PT./Time	Pick Up PT./Time
1/2 AZ-TF1 Type 1	Ron Dykes	40		0700	1600
CA-TF4 SWRT	Richard Brown	14	5	0700	1600
USCG	Chris Pisares	10	5	0700	1600

7. Control Operations

1. Perform search and rescue operations in your branch utilizing the following search methods (in the following sequence):
   a. Perform a 'primary search' by either making physical contact with the building and or having a clear view into all living spaces down to the floor level.
   b. After performing a 'primary search', building will be marked with standard US&R marking system. If only a partial area of the building was searched, it will be noted in the right side of the X (e.g. "ATTIC")
2. Assist with the extraction of evacuees.

8. Special Instructions

1. Prepare and have available appropriate equipment for forcible roof entry operations.
2. When involved in flood water operations – Stay out of the water!
3. Wear appropriate PPE for working environment.
4. Treat all water as a potential hazardous material. Decon appropriately if you inadvertently enter flood waters.
5. Monitor and evaluate situations closely – Individuals may be armed.
6. Utilize marking system.

9. Division/Group Communication Summary

Function	Frequency	System	Channel	Function	Frequency	System	Channel
Command Rptr			Z5 Ch2	Logistics Rptr			
Operations Rptr			Z5 Ch8	Tactical (Specific to TF)			Z6 Ch 5

Prepared by (Resource Unit Leader)	Approved by (Planning Section Chief)	Date	Time
Tom Richardson	Dan Hudson	September 8, 2005	0010 Hours

Incident Name	Operational Period	
Hurricane Katrina	Date: September 8-9, 2005 Time: 07:00 hrs to 07:00 hrs	**West Branch** **University Division**

Operations Personnel	
Operations Section Chief	Paul Bailey
Branch Director	Dominic Marzano
Division Supervisor	Mike Esparza

6. Resources Assigned this Period

Resource Designator	Leader	Number	Boats Assigned	Drop Off PT./Time	Pick Up PT./Time
CA-TF6 US&R	Mike Esparza	80		0700	1600
USCG	Chris Pisares	24	12	0700	1600
UH60 Blackhawk	TBD	TBD in am		0700	1600

7. Control Operations

1. Perform search and rescue operations in your branch utilizing the following search methods (in the following sequence):
   a. Perform a 'primary search' by either making physical contact with the building and or having a clear view into all living spaces down to the floor level.
   b. After performing a 'primary search', building will be marked with standard US&R marking system. If only a partial area of the building was searched, it will be noted in the right side of the X (e.g. "ATTIC")
2. Assist with the extraction of evacuees.

8. Special Instructions

1. Prepare and have available appropriate equipment for forcible roof entry operations.
2. When involved in flood water operations – Stay out of the water!
3. Wear appropriate PPE for working environment.
4. Treat all water as a potential hazardous material. Decon appropriately if you inadvertently enter flood waters.
5. Monitor and evaluate situations closely – Individuals may be armed.
6. Utilize marking system.

9. Division/Group Communication Summary

Function	Frequency	System	Channel	Function	Frequency	System	Channel
Command Rptr			Z5 Ch2	Logistics Rptr			
Operations Rptr			Z5 Ch8	Tactical (Specific to TF)			Z5 Ch 13

Prepared by (Resource Unit Leader)	Approved by (Planning Section Chief)	Date	Time
Tom Richardson	Dan Hudson	September 8, 2005	0000 Hours

Incident Name	Operational Period	
Hurricane Katrina	Date: September 8-9, 2005 Time: 07:00 hrs to 07:00 hrs	**West Branch** **Marin Division**

Operations Personnel	
Operations Section Chief	Paul Bailey
Branch Director	Dominic Marzano
Division Supervisor	Perry Peake

6. Resources Assigned this Period

Resource Designator	Leader	Number	Boats Assigned	Drop Off PT./Time	Pick Up PT./Time
CA-TF8 US&R	Perry Peake	80		0700	1600
USCG	Chris Pisares	24	12	0700	1600

7. Control Operations

1. Perform search and rescue operations in your branch utilizing the following search methods (in the following sequence):
   a. Perform a 'primary search' by either making physical contact with the building and or having a clear view into all living spaces down to the floor level.
   b. After performing a 'primary search', building will be marked with standard US&R marking system. If only a partial area of the building was searched, it will be noted in the right side of the X (e.g. "ATTIC")
2. Assist with the extraction of evacuees.

8. Special Instructions

1. Prepare and have available appropriate equipment for forcible roof entry operations.
2. When involved in flood water operations – Stay out of the water!
3. Wear appropriate PPE for working environment.
4. Treat all water as a potential hazardous material. Decon appropriately if you inadvertently enter flood waters.
5. Monitor and evaluate situations closely – Individuals may be armed.
6. Utilize marking system.

9. Division/Group Communication Summary

Function	Frequency	System	Channel	Function	Frequency	System	Channel
Command Rptr			Z5 Ch2	Logistics Rptr			
Operations Rptr			Z5 Ch8	Tactical (Specific to TF)			Z5 Ch 14

Prepared by (Resource Unit Leader)	Approved by (Planning Section Chief)	Date	Time
Tom Richardson	Dan Hudson	September 7, 2005	2359 Hours

Incident Name	Operational Period	
Hurricane Katrina	Date: September 8-9, 2005 Time: 07:00 hrs to 07:00 hrs	**East Branch** **Bundy Division**

Operations Personnel	
Operations Section Chief	Paul Bailey
Branch Director	Ruben Almaguer
Division Supervisor	Harold Schapelhouman

6. Resources Assigned this Period

Resource Designator	Leader	Number	Boats Assigned	Drop Off PT./Time	Pick Up PT./Time
CA-TF3 SWRT	Harold Schapelhouman	14	5	0700	1600
NJ-TF SWRT Type 3	J. Riley	26	2	0700	1600

7. Control Operations

1. Perform search and rescue operations in your branch utilizing the following search methods (in the following sequence):
   a. Perform a 'primary search' by either making physical contact with the building and or having a clear view into all living spaces down to the floor level.
   b. After performing a 'primary search', building will be marked with standard US&R marking system. If only a partial area of the building was searched, it will be noted in the right side of the X (e.g. "ATTIC")
2. Assist with the extraction of evacuees.

8. Special Instructions

1. Prepare and have available appropriate equipment for forcible roof entry operations.
2. When involved in flood water operations – Stay out of the water!
3. Wear appropriate PPE for working environment.
4. Treat all water as a potential hazardous material. Decon appropriately if you inadvertently enter flood waters.
5. Monitor and evaluate situations closely – There are looters in the area and they have weapons!
6.. Utilize marking system.

9. Division/Group Communication Summary

Function	Frequency	System	Channel	Function	Frequency	System	Channel
Command Rptr			Z5 Ch2	Logistics Rptr			
Operations Rptr			Z5 Ch8	Tactical (Specific to TF)			Z6 Ch 9

Prepared by (Resource Unit Leader)	Approved by (Planning Section Chief)	Date	Time
Tom Richardson	Dan Hudson	September 7, 2005	2355 Hours

Incident Name	Operational Period	East Branch
Hurricane Katrina	Date: September 8-9, 2005 Time: 07:00 hrs to 07:00 hrs	Mayo Division

Operations Personnel	
Operations Section Chief	Paul Bailey
Branch Director	Ruben Almaguer
Division Supervisor	

6. Resources Assigned this Period

Resource Designator	Leader	Number	Boats Assigned	Drop Off PT./Time	Pick Up PT./Time
CA-TF3 US&R		80		0700	1600
Agency TBD		10		0700	1600

7. Control Operations

1. Perform search and rescue operations in your branch utilizing the following search methods (in the following sequence):
   a. Perform a 'primary search' by either making physical contact with the building and or having a clear view into all living spaces down to the floor level.
   b. After performing a 'primary search', building will be marked with standard US&R marking system. If only a partial area of the building was searched, it will be noted in the right side of the X (e.g. "ATTIC")
2. Assist with the extraction of evacuees.

8. Special Instructions

1. Prepare and have available appropriate equipment for forcible roof entry operations.
2. When involved in flood water operations – Stay out of the water!
3. Wear appropriate PPE for working environment.
4. Treat all water as a potential hazardous material. Decon appropriately if you inadvertently enter flood waters.
5. Utilize marking system.

9. Division/Group Communication Summary

Function	Frequency	System	Channel	Function	Frequency	System	Channel
Command Rptr			Z5 Ch2	Logistics Rptr			
Operations Rptr			Z5 Ch8	Tactical (Specific to TF)			Z6 Ch 3

Prepared by (Resource Unit Leader)	Approved by (Planning Section Chief)	Date	Time
Tom Richardson	Dan Hudson	September 8, 2005	0000 Hours

Incident Name	Operational Period	East Branch
Hurricane Katrina	Date: September 8-9, 2005 Time: 07:00 hrs to 07:00 hrs	Wright Division

Operations Personnel	
Operations Section Chief	Paul Bailey
Branch Director	Ruben Almaguer
Division Supervisor	John Grana

6. Resources Assigned this Period

Resource Designator	Leader	Number	Boats Assigned	Drop Off PT./Time	Pick Up PT./Time
1/2 NV-TF1 Type 1	John Grana	40		0700	1600
Agency TBD			5	0700	1600

7. Control Operations

1. Perform search and rescue operations in your branch utilizing the following search methods (in the following sequence):
   a. Perform a 'primary search' by either making physical contact with the building and or having a clear view into all living spaces down to the floor level.
   b. After performing a 'primary search', building will be marked with standard US&R marking system. If only a partial area of the building was searched, it will be noted in the right side of the X (e.g. "ATTIC")
2. Assist with the extraction of evacuees.

8. Special Instructions

1. Prepare and have available appropriate equipment for forcible roof entry operations.
2. When involved in flood water operations – Stay out of the water!
3. Wear appropriate PPE for working environment.
4. Treat all water as a potential hazardous material. Decon appropriately if you inadvertently enter flood waters.
5. Monitor and evaluate situations closely – Individuals may be armed.
6. Utilize marking system.

9. Division/Group Communication Summary

Function	Frequency	System	Channel	Function	Frequency	System	Channel
Command Rptr			Z5 Ch2	Logistics Rptr			
Operations Rptr			Z5 Ch8	Tactical (Specific to TF)			Z6 Ch7

Prepared by (Resource Unit Leader)	Approved by (Planning Section Chief)	Date	Time
Tom Richardson	Dan Hudson	September 8, 2005	0000 Hours

Incident Name	Operational Period	East Branch
Hurricane Katrina	Date: September 8-9, 2005 Time: 07:00 hrs to 07:00 hrs	Church Division

Operations Personnel	
Operations Section Chief	Paul Bailey
Branch Director	Ruben Almaguer
Division Supervisor	Jack Wise

6. Resources Assigned this Period

Resource Designator	Leader	Number	Boats Assigned	Drop Off PT./Time	Pick Up PT./Time
CA-TF1 SWRT	Jack Wise	14	5	0700	1600
CA-TF2 SWRT	Scott Smith	14	5	0700	1600

7. Control Operations

1. Perform search and rescue operations in your branch utilizing the following search methods (in the following sequence):
   a. Perform a 'primary search' by either making physical contact with the building and or having a clear view into all living spaces down to the floor level.
   b. After performing a 'primary search', building will be marked with standard US&R marking system. If only a partial area of the building was searched, it will be noted in the right side of the X (e.g. "ATTIC")
2. Assist with the extraction of evacuees.

8. Special Instructions

1. Prepare and have available appropriate equipment for forcible roof entry operations.
2. When involved in flood water operations – Stay out of the water!
3. Wear appropriate PPE for working environment.
4. Treat all water as a potential hazardous material. Decon appropriately if you inadvertently enter flood waters.
5. Utilize marking system.

9. Division/Group Communication Summary

Function	Frequency	System	Channel	Function	Frequency	System	Channel
Command Rptr			Z5 Ch2	Logistics Rptr			
Operations Rptr			Z5 Ch8	Tactical (Specific to TF)			Z3 Ch 1

Prepared by (Resource Unit Leader)	Approved by (Planning Section Chief)	Date	Time
Tom Richardson	Dan Hudson	September 7, 2005	2354 Hours

Incident Name	Operational Period	
Hurricane Katrina	Date: September 8-9, 2005 Time: 07:00 hrs to 07:00 hrs	**South Branch** **Peninsula Division**

Operations Personnel	
Operations Section Chief	Paul Bailey
Branch Director	G. George
Division Supervisor	

6. Resources Assigned this Period

Resource Designator	Leader	Number	Boats Assigned	Drop Off PT./Time	Pick Up PT./Time
CA-TF5 SWRT	Michael Boyle	14	5	0700	1600
CA-TF6 SWRT	Dave Lesh	14	5	0700	1600
CA-TF7 SWRT	Jay Bowdler	14	5	0700	1600
CA-TF8 SWRT	Dave Williams	14	5	0700	1600

7. Control Operations

1. Perform search and rescue operations in your branch utilizing the following search methods (in the following sequence):
   a. Perform a 'primary search' by either making physical contact with the building and or having a clear view into all living spaces down to the floor level.
   b. After performing a 'primary search', building will be marked with standard US&R marking system. If only a partial area of the building was searched, it will be noted in the right side of the X (e.g. "ATTIC")
2. Assist with the extraction of evacuees.

8. Special Instructions

1. Prepare and have available appropriate equipment for forcible roof entry operations.
2. When involved in flood water operations – Stay out of the water!
3. Wear appropriate PPE for working environment.
4. Treat all water as a potential hazardous material. Decon appropriately if you inadvertently enter flood waters.

9. Division/Group Communication Summary

Function	Frequency	System	Channel	Function	Frequency	System	Channel
Command Rptr		AZ-TF1	Special HT1000	Logistics Rptr			
Operations Rptr			None	Tactical (Specific to TF)			Z3 Ch 3

Prepared by (Resource Unit Leader)	Approved by (Planning Section Chief)	Date	Time
Tom Richardson	Dan Hudson	September 8, 2005	0000 Hours

Incident Name	Operational Period	
Hurricane Katrina	Date: September 8-9, 2005 Time: 07:00 hrs to 07:00 hrs	**South Branch** **Way South Division**

Operations Personnel	
Operations Section Chief	Paul Bailey
Branch Director	G. George
Division Supervisor	

6. Resources Assigned this Period

Resource Designator	Leader	Number	Boats Assigned	Drop Off PT./Time	Pick Up PT./Time
1/2 AZ-TF1 Type 1	Ron Dykes	40		0700	1600
1/2 NV-TF1 Type 1	John Grana	40		0700	1600
UH60 Blackhawk	TBD in am	TBD		0700	1600
CH47 Chinook	TBD in am	1		0700	1600
Medivac	TBD in am	TBD		0700	1600

7. Control Operations

1. Perform search and rescue operations in your branch utilizing the following search methods (in the following sequence):
   a. Perform a 'primary search' by either making physical contact with the building and or having a clear view into all living spaces down to the floor level.
   b. After performing a 'primary search', building will be marked with standard US&R marking system. If only a partial area of the building was searched, it will be noted in the right side of the X (e.g. "ATTIC")
2. Assist with the extraction of evacuees.

8. Special Instructions

1. Prepare and have available appropriate equipment for forcible roof entry operations.
2. When involved in flood water operations – Stay out of the water!
3. Wear appropriate PPE for working environment.
4. Treat all water as a potential hazardous material. Decon appropriately if you inadvertently enter flood waters.

9. Division/Group Communication Summary

Function	Frequency	System	Channel	Function	Frequency	System	Channel
Command Rptr		AZ-TF1	Special HT1000	Logistics Rptr			
Operations Rptr			None	Tactical (Specific to TF)			AZ Z6 Ch 5 NV Z6 Ch 7

Prepared by (Resource Unit Leader)	Approved by (Planning Section Chief)	Date	Time
Tom Richardson	Dan Hudson	September 8, 2005	0000 Hours

Incident Name	Operational Period	
Hurricane Katrina	Date: September 8-9, 2005 Time: 07:00 hrs to 07:00 hrs	**Special Ops Group**

Operations Personnel	
Operations Section Chief	Paul Bailey
Branch Director	
Group Supervisor	Mark Hawkins

6. Resources Assigned this Period

Resource Designator	Leader	Number	Boats Assigned	Drop Off PT./Time	Pick Up PT./Time
CA-TF5 US&R	Mark Hawkins	80		0700	1600
Agency TBD			5	0700	1600
UH60 Blackhawk	TBD	TBD in am		0700	1600
Medivac Helo	TBD	TBD in am		0700	1600

7. Control Operations

1. Perform search and rescue operations in your branch utilizing the following search methods (in the following sequence):
   a. Perform a 'primary search' by either making physical contact with the building and or having a clear view into all living spaces down to the floor level.
   b. After performing a 'primary search', building will be marked with standard US&R marking system. If only a partial area of the building was searched, it will be noted in the right side of the X (e.g. "ATTIC")
2. Assist with the extraction of evacuees.

8. Special Instructions

1. Prepare and have available appropriate equipment for forcible roof entry operations.
2. When involved in flood water operations – Stay out of the water!
3. Wear appropriate PPE for working environment.
4. Treat all water as a potential hazardous material. Decon appropriately if you inadvertently enter flood waters.
5. Boats, road vehicles, equipment and personnel should be washed with soap and water until further information pertaining to the content of the flood waters is known.

9. Division/Group Communication Summary

Function	Frequency	System	Channel	Function	Frequency	System	Channel
Command Rptr			Z5 Ch2	Logistics Rptr			
Operations Rptr			Z5 Ch8	Tactical (Specific to TF)			Z5 Ch 11

Prepared by (Resource Unit Leader)	Approved by (Planning Section Chief)	Date	Time
Tom Richardson	Dan Hudson	September 8, 2005	0020 Hours

INCIDENT RADIO COMMUNICATIONS PLAN	1. INCIDENT NAME Hurricane Katrina	2. DATE/TIME PREPARED 09-07-05 2300	3. OPERATIONAL PERIOD DATE/TIME 0700 09-08-05---0700 09-09-05

BASIC RADIO CHANNEL UTILIZATION

SYSTEM / CACHE	ZONE	CHANNEL	DISPLAY	FUNCTION	REMARKS
US&R	5	1	AUSAR1	Direct	Simplex of Zone 5, Ch 2
US&R	5	2	AUSAR2	**Repeater**	**Wide Area Command Repeat (Work areas to BOO)**
US&R	5	4	AUSAR4	**Repeater**	**Shared Logistics Repeat: Requires base station in BOO for wide area coverage**
Cal OES 4 (SOPS)	5	5	AUSAR5	Tactical	California Swift Water Team 4 (Special Op's), under control of ST COML
US&R	5	6	AUSAR6	**Repeater**	**Chalmette Repeat, not operational today**
US&R	5	8	AUSAR8	**Repeater**	**Operations Repeater – for Division and Group supervisors (on tower trailer)**
CA TF-5	5	11	AUSAR11	Tactical	California TF-5, under control of the TF COML
CA TF-6	5	13	AUSAR13	Tactical	California TF-6, under control of the TF COML
CA TF-8	5	14	AUSAR14	Tactical	California TF-8, under control of the TF COML
US&R	5	15	CONVOY	Tactical	On-site IST operations and logistics
CA TF-2	6	1	SOPS1	Tactical	California TF-2, under control of the TF COML
CA TF-3	6	3	SOPS3	Tactical	California TF-3, under control of the TF COML
AZ TF-1	6	5	SOPS5	Tactical	Both teams of AZ TF-1, assigned to the West Golf Course Div. & "Way South Div."
NV TF-1	6	7	SOPS7	Tactical	Both teams of NV TF-1, assigned to the Wright Division & "Way South Division"
Cal OES 1 & 2	3	1	FEMA 1	Tactical	California Swift Water Teams 1 & 2, under control of ST COML
Cal OES 5 - 8	3	3	FEMA 3	Tactical	California Swift Water Teams 5 - 8, under control of ST COML
Cal OES 3	6	9	SOPS9	Tactical	California Swift Water Teams 3, under control of ST COML
AZ TF-1	AZ TF-1 Special		HT1000	**Repeater**	**South Branch Command Repeat for all Group & Division Sup's, and South Branch Director – All Supervisors will be briefed before operations**

	5. PREPARED BY (COMMUNICATIONS UNIT) Pete Friedman, Blue IST COML

FEMA

FEDERAL EMERGENCY MANAGEMENT AGENCY
National Disaster Medical System
National Urban Search and Rescue Response System

MEDICAL PLAN	1. INCIDENT NAME Hurricane Katrina- New Orleans, LA	2. DATE PREPARED 9-7-05	3. TIME PREPARED 2030	4. OPERATIONAL PERIOD 0700 9/8/05-0700 9/9/05

5. INCIDENT MEDICAL AID STATIONS

MEDICAL AID STATIONS	LOCATION	PARAMEDICS	
		YES	NO
FEMA US&R IST Base of Operations	5901 Airline Dr. (SR 61), N.O., LA. N 29 58.462, W 90 11.712	MDs	
FEMA US&R Base of Operations	East Jefferson General Hospital Mobile Public Health Clinic vehicle adjacent to TX TF-1 BoO	MDs	

6. TRANSPORTATION

A. AMBULANCE SERVICES

NAME	ADDRESS	PHONE	PARAMEDICS	
			YES	NO
East Jefferson Parish EMS at East Jefferson Parish Hospital		504-349-5375 or 504-456-8149	X	
Acadian Ambulance/Air Ambulance		337-291-1111 or 337-654-1500	X	

B. INCIDENT AMBULANCES

NAME	LOCATION	PARAMEDICS	
		YES	NO
Contract EMS helicopter	FEMA US&R IST BoO	X	

7. HOSPITALS

NAME	ADDRESS	TRAVEL TIME		PHONE	HELIPAD		BURN CENTER	
		AIR	GRND		YES	NO	YES	NO
Ochsner Clinic Foundation Hospital	1514 Jefferson Hwy, SR 90, N.O., LA. [TASK FORCE MEMBERS]	-	5 min	504-842-5898 or 504-842-6939 or 504-842-3772		X	Level II trauma center	
East Jefferson General Hospital	N 30º 45" W 90º 40" Recommend S or W approach [Air Evac]	-	5 min	504-454-4377	X 20 Ton			X

8. MEDICAL EMERGENCY PROCEDURES

For emergencies call 7-digit numbers above, then call the US&R IST Medical Unit at 714-746-6531, or 202-431-8817, or call on zone 5 channel 2

For urgent, nonemergent and occupational medicine issues with US&R TF members or non-DoD federal, state and local responders report to the NDMS DMAT Strike Team in the East Jefferson General Hospital public health van located next to the logistics building at the US&R IST

Call the US&R IST Medical Unit with any Task Force member care documented on the US&R Injury & Illness Log

For air evacuation of individual seriously injured or ill victims and Task Force/SWRT members from operational branches or divisions contact IST Comm or IST Medical in Zone 5 Channel 2

ICS 206 8-78	9. PREPARED BY (DEP. MEDICAL UNIT LEADER) Ken Miller MD PhD/D. Gonzales MD	10. REVIEWED BY (SAFETY OFFICER D. Shawver/D. Norman

FEMA

FEDERAL EMERGENCY MANAGEMENT AGENCY
National Disaster Medical System
National Urban Search and Rescue Response System

Medical Plan ICS 206-A	1. INCIDENT NAME Hurricane Katrina-New Orleans, LA	2. DATE PREPARED 9/7/05	3. TIME PREPARED 2030
4. OPERATIONAL PERIOD 0700 9/8/05 – 0700 9/9/05			

Supplemental Medical Plan-Recovery of Human Remains

Personal Protection and Protective Equipment

Hygiene
- Hand/face hygiene using antimicrobial aqueous wipes at site of operations
- Soap and water hand washing and shower at end of operational period
- Soap and water cleaning of equipment at end of operational period

Contact Precautions (principle hazard)
- Latex/nitrile exam gloves under leather work gloves; leather gloves discarded after operational period
- Tyvek or equivalent overgarment for contact and splash protection (see below for operational precautions)
- Eye protection (splash protection; e.g. sunglasses, safety glasses)

Respiratory Precautions (dust and particulates)
- Infectious respiratory hazards are limited; respirator provides additional face splash protection
- N-95 respirator is adequate protection
- 5-gas atmospheric monitor for void spaces and in proximity to suspicious nonaqueous spills

Tyvek (or equivalent) Overgarment & Respirator Environmental Safety
- Pre-operations hydration
- Monitor time in overgarment (idle and working); dress down to waist when idle in a safe environment
- Plan for crew rotation based upon operational tempo and environmental conditions
- Plan for crew rehab, cooling and hydration
- Limit time in N-95 respirator to operational needs (reduces respiratory heat loss)
- *Doff used overgarment, leather work gloves and N-95 mask into a body bag, keeping exam gloves on, close the bag leaving enough opening to discard exam gloves and place the exam gloves in the body bag last*

Breach of Personal Protective Equipment
- Skin/mucosal irrigation with clean water or saline
- Saline irrigation of wound
- Antimicrobial aqueous wipe of skin or of skin around wound (not within wound), cover wound
- Refer to Task Force Medical Team and IST Medical Unit for further risk assessment

ICS 206-A

FEMA

FEDERAL EMERGENCY MANAGEMENT AGENCY
Emergency Support Function–9
National Urban Search and Rescue Response System

HAZMAT PLAN	1. INCIDENT NAME Hurricane Katrina	2. DATE PREPARED 09/05/05	3. TIME PREPARED 2345 hr CST	4. OPERATIONAL PERIOD 0700 09/08/05-0700 09/09/05

5. HAZMAT Associated with the Incident

Type of HAZMAT	LOCATION	Confirmed	
		YES	NO
Natural Gas	Throughout the Area of Operation	X	
Petro Chemicals	Throughout the Area of Operation	X	
Radiation Sources	Unknown, likely associated with oil industry		X
ORM	Throughout the Area of Operation		X

6. Narrative

Operational Assumption.
Chemicals associated with this incident are those normally found in any heavily industrialized area. The largest amounts are those from the petro-chemical industry (Oil production). Although, the Mississippi river is a major transportation route for hazardous material. The releases of these chemicals were caused by a combination of the hurricane and flooding. It should be assumed that the flood waters are contaminated; the exact contaminates are unknown.

Decontamination.
If possible, boats, road vehicles, equipment and personnel should be washed with soap and water until further information pertaining to the content of the flood waters is known. For work boots an antimicrobial spray will be used on the outside of the boots once removed from the wearer. After spraying, the boots should be allowed to air dry until the next operational period. When ever possible contaminated uniforms should be removed prior to returning to the task force's base of operation. Normal laundering is sufficient for uniforms.

Operational Considerations.
Work practices should be designed to minimize contact with the contaminated waters. Areas of operation that will require further HAZMAT evaluation shall include but are not limited to enclosed areas, when HAZMAT containers are present, when facilities that customarily handle HAZMAT are involved and when in the opinion of the Task Force HAZMAT Specialist, further evaluation is necessary. Areas with unusually high levels of contamination e.g. visible material, "chemical odors" should not be searched until mitigation has taken place.

Task Force Mitigation.
The Task Forces are not designed to be HAZMAT teams although horizontal and vertical ventilation and shutting off residential natural gas lines are mitigation efforts available to the Task Force.

Reporting Requirements.
All Task Forces that encounter HAZMAT in volumes large enough to require abandonment of a SAR mission, or in the opinion of the Task Force HAZMAT Spec. is significant enough will report the following information to the IST HAZMAT Spec.

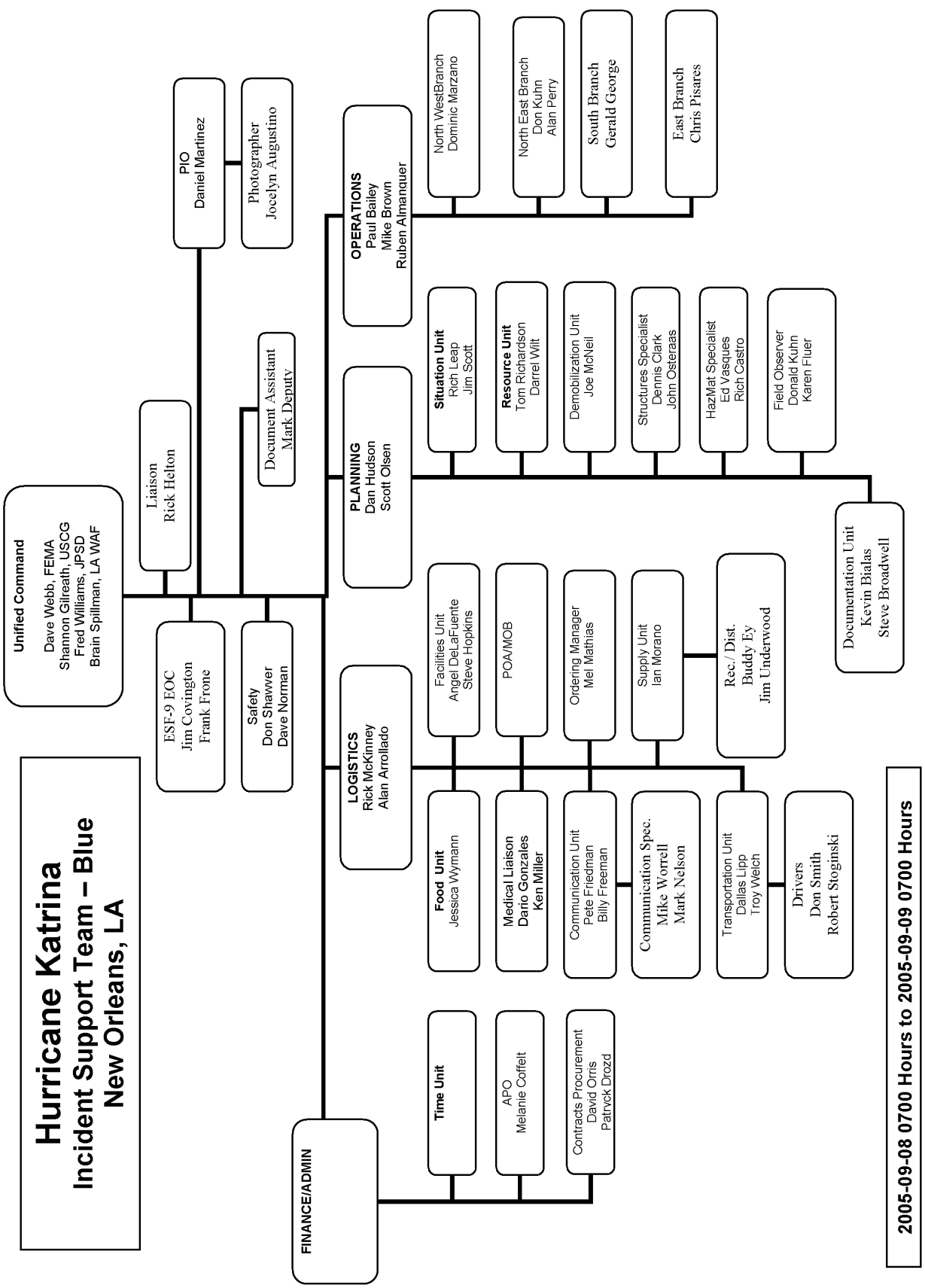
1. Location with GPS Lat/Long. coordinates
2. Known or suspected type of HAZMAT that is involved
3. Estimated amount

The IST HAZMAT Spec. will advise the Federal EPA of daily HAZMAT intelligence.

First Aid for Exposure.
Any exposure to a known or suspected HAZMAT will be reported to the IST Medical Unit.

Demobilization.
As with all work uniforms, BDU's should be washed separate from your normal household clothing. Normal household washing is sufficient.

ICS 206H 8-78	7. Reviewed by (IST HAZMAT Spec.) E. VASQUES/ R. CASTRO	8. Reviewed by (Safety Officer & Medical Unit) D. SHAWVER/ K. MILLER


Hurricane Katrina
Incident Support Team – Blue
New Orleans, LA
Unified Command
Dave Webb, FEMA
Shannon Gilreath, USCG
Fred Williams, JPSD
Brain Spillman, LA WAF
Liaison
Rick Helton
PIO
Daniel Martinez
Photographer
Jocelyn Augustino
Document Assistant
Mark Deputy
ESF-9 EOC
Jim Covington
Frank Frone
Safety
Don Shawver
Dave Norman
PLANNING
Dan Hudson
Scott Olsen
OPERATIONS
Paul Bailey
Mike Brown
Ruben Almanquer
North WestBranch
Dominic Marzano
North East Branch
Don Kuhn
Alan Perry
South Branch
Gerald George
East Branch
Chris Pisares
Situation Unit
Rich Leap
Jim Scott
Resource Unit
Tom Richardson
Darrel Wilt
Demobilization Unit
Joe McNeil
Structures Specialist
Dennis Clark
John Osteraas
HazMat Specialist
Ed Vasques
Rich Castro
Field Observer
Donald Kuhn
Karen Fluer
Documentation Unit
Kevin Bialas
Steve Broadwell
LOGISTICS
Rick McKinney
Alan Arrollado
Facilities Unit
Angel DeLaFuente
Steve Hopkins
POA/MOB
Ordering Manager
Mel Mathias
Supply Unit
Ian Morano
Rec./ Dist.
Buddy Ey
Jim Underwood
Food Unit
Jessica Wymann
Medical Liaison
Dario Gonzales
Ken Miller
Communication Unit
Pete Friedman
Billy Freeman
Communication Spec.
Mike Worrell
Mark Nelson
Transportation Unit
Dallas Lipp
Troy Welch
Drivers
Don Smith
Robert Stoginski
FINANCE/ADMIN
Time Unit
APO
Melanie Coffelt
Contracts Procurement
David Orris
Patryck Drozd
2005-09-08 0700 Hours to 2005-09-09 0700 Hours

Department of Homeland Security
Incident Support Team

Hurricane Katrina Safety Protocol

IST Base of Operations
5800 Airline Drive
New Orleans, LA 70112
800-311-0947 (Phone)

FEDERAL EMERGENCY MANAGEMENT AGENCY
Emergency Support Function–9 -Incident Support Team
National Urban Search and Rescue Response System

SAFETY PLAN	1. INCIDENT NAME Hurricane Katrina	2. DATE PREPARED 09/07/05	3. TIME PREPARED 2100 hrs	4. OPS PERIOD 0700-1900 hrs

SAFETY PROCEDURES

1. **PERSONAL SAFETY**
   a. Ensure personnel accountability
   b. Be aware of your surroundings
   c. Sunscreen and insect repellant!
   d. Maintain communications with deployed resources
   e. 500' Minimum from all Helicopters-Chinook Helos produce severe down drafts
   f. Know what type of Helo is in your area-develop a contingency for emergency Helispot
   g. Door must close when being transported by Helo-Nobody sitting on edge with door open
   h. Do Not approach Helo unless instructed to by Crew Chief/ Crew Member
   i. The Soccer Field and Football Field are restricted to air traffic only-No Personnel on fields
   j. Notify Operations-Military Liaison-Confirm LZ is Clear
   k. HYDRATE AND WASH YOUR HANDS
      - ☑ Reference Hurricane Katrina Personal Hygiene Plan
      - ☑ **Hydration Plan-2-4 Quarts Per Hour**

2. **OPERATIONS**
   a. Uncontrolled intersections! Signals are out – make sure you have the right of way
   b. Several roads hazards exist, downed wires, debris in roadway and over head hazards
   c. Vehicle accidents – follow Accident Reporting Procedures

3. **If Serious Injury- Call for "EMERGENCY TRAFFIC" on Command; State your Emergency, Type of Injury, Location, Type of Transport Needed-To Division, Branch, Operations, IST Leader, Medical Unit Leader. Stay off the radio until "ALL CLEAR" is given by the IST Leader.**

9. PREPARED BY Don Shawver/Dave Norman, IST Safety	10. REVIEWED BY

ICS – Safety

INCIDENT ACTION PLAN SAFETY ANALYSIS	1. Incident Name	2. Date	3. Time
	Hurricane Katrina	9-8-05	2000

	LACES* Analysis of Tactical Applications **L**ookouts Awareness **C**ommunications **E**scape routes **S**afety zones											Other Risk Analysis							
Division/Group/Branch	Personnel Protective Equip.	Overhead Hazards	Trip/Fall Hazards	Utilities	Hydration/Fatigue	Power Tools/Equipment	Unstable Structure	Evacuees Transportation	Transportation	Base of Operations	**LACES Mitigations**	HAZARDOUS MATERIALS	TRANSPORTATION	COMMUNICATIONS	Technical Equipment	MULTI-AIRCRAFT	Co-Located Task Forces		Other Risk Mitigations
North City Branch	X	X		X	X		X				Proper PPE, Beware of possible energized utilities-Avoid, Decon/wash hands, watch for local wildlife-remain on boat as much as possible-2-4 qts. Per hour for hydration	X	X	X		X	X		Decon, Drive speed limit, extra batteries, proper channels, comm.. with aircraft, know who you is working in your operational area-Loose Dogs
North City Branch								X			Make sure Evacuees are evacuated to a known location Follow Hydration Plan-2-4 quarts of water per hour-work rest as needed-watch your teams for signs of fatigue								in your operational areas-Pit Bulls/Snakes
North City Branch	X	X		X	X		X				Proper PPE, Beware of possible energized utilities, Follow Hydration Plan-2-4 Quarts per hour	X	X	X		X	X		Decon, extra batteries, proper channels, comm. with aircraft, know who is working in your operational area
Penn.	X				X			X			Hydrate, Status Reports to Operations every 2-hours								
Marin North	X	X		X	X		X				Proper PPE's, Maintain Situational Awareness, 2-4 Qrts. Per hour, work rest as needed-watch your teams for fatigue, Post look out if you enter a structure								
SPECIAL OPS Group	X	X		X	X			X			Make sure Evacuees are evacuated to known Location. Land only on East LZ, hydrate , Proper PPE for assignment	X	X			X	X		Decon, Drive speed Limit, Extra Batteries, Proper channels, Know who is working in your operational area
ALL											Watch for Extreme Down Drafts when operating around all Helos; Secure all Gear and your PPE's — 500' Min. from all helos-Keep Unit to Unit Radio Traffic off of Command CH.2								Do not approach aircraft unless instructed-No hanging of feet out side helo-Door must shut
ALL											Keep all roadways clear once boats have been deployed-Bring Shade-Watch for below surface hazards								Watch for signs of Heat Exhaustion, Follow Medical Plan if injury occurs

Prepared by (Name and Position)	Date Prepared: 9/7/05	Operational Period 9/8/05
Don Shawver/ Dave Norman IST Safety		(Date /Time 0700 TO 0700

WGS84
Degrees – Minutes – Seconds

On this incident, all US&R Assets must change their GPS settings to:

Map Datum of "WGS84"
Unit of Measurement of "Degrees – Minutes – Seconds"

This is a change from earlier direction – because military aircraft uses only Degrees – Minutes – Seconds, we must adopt this standard for this mission. To make sure that we are giving accurate direction to our air support, please announce the unit of measurement that you are using.

Example: N 29°55'46
W 089°58'14

"Deputy Operations from Montana Task Force One, we need evacuation of two civilians from the roof of a building at the following coordinates:" "North twenty-nine degrees, five-five point four-six by West zero eight nine degrees, five-eight point one-four, using degrees minutes seconds."

If your GPS adds a single character after a decimal point at the end of a coordinate, for instance "N 29°55'46.5", please ignore it when specifying a location for aircraft; the AirOP's only wants 6 characters for each direction.

HELISPOT SAFETY CHECKLIST

29 58.49 N / 090 11.89W

Personnel Safety (Air transport)

Helmets secured, eye protection, ear protection

Secure all loose gear and boats prior to boarding and when departing

Do not approach aircraft unless directed to by Crew Chief/Military Liaison/Safety

Military/Police-ensure firearms retention devices are in place and secure

Equipment/Cargo (Air transport)

Secure all loose gear prior to traveling to the Helispot

Enter at the second "B" driveway-to back service road-turn right-travel to end of service road-off load boats/gear outside service gate – Exit at last driveway.

Secure all loose gear-stage to the right-inside the fenced area

500' distance from aircraft until directed by Crew Chief/Helispot Manager/ Safety

Supervisors confirm water and food is also delivered to your operational area

Supervisors/Leaders (Air transport)

Do not approach helicopter unless directed by Crew Chief

Establish which team members and the order they will be loading-PAR

Supervisors/Leaders confirm your teams are secure once in helicopter

Supervisors/Leaders confirm gear is secured/equipment is secured

Supervisors/Leaders confirm gear is accounted for when boarding and when departing

Helicopter Safety

Maintain eye contact with helicopter and surrounding areas when landing at LZ

Confirm you have a safe helispot large enough to accommodate your Helicopter in the operational area-Assign a Rescuer to man the helispot

Have an Escape Plan in place /Contingency Plan if you need a night extraction-light sticks

Supervisors maintain Status Reports to Military Liason/Helibase Manager/Safety

Confirm you have a large enough helispot for the helicopter requested in the operational area

Have a Contingency Plan in place if you cannot be picked up by helicopter

MH-53 Sea Stallion, CH-47 Chinook, UH-60 Blackhawk produce severe down drafts

- ✓ Maintain situational awareness-look-up, look-down, look-around

Use proper hand-signals (See attached)

Confirm that the Landing Zone is" CLEAR" prior to landing any helicopters- confirm evacuees are in a safe location – Notify Operations, Military Liaison, Safety-upon your return to the SAR LZ

Motor Vehicle Accident Reporting Procedures

In case of accident:

1. Stop Immediately
2. Take steps to prevent another accident at scene
3. Call for emergency medical services if needed
4. Notify law enforcement agency having jurisdiction
5. **Notify immediate Supervisor**
6. **Notify IST Transportation Unit Leader** (through the chain of Command)
7. **Notify IST Safety Officer**
8. Do not sign any paper or make any statement as to who was at fault (except to your supervisor or a Federal Government investigator)
9. Get name and address of each witness.
10. Give your name, address, place of employment, name of your supervisor and upon request, show your operators permit and vehicle registration
11. **Complete Motor Vehicle Accident Report** (Standard Form 91) at the scene, if conditions prevent this, make the following notes:
    a. Registration information for the other vehicle(s)
        i. Vehicle owners name, license number, tag number, vehicle ID number & vehicle description
        ii. Operators name, address, drivers license number and expiration date
        iii. Name and address of each person involved and extent of injuries
        iv. Name, address and policy number of insurance company
        v. General information about the accident; location, weather conditions, time, damage…etc
12. Submit all reports and data to your supervisor / IST Ground Support within 12 hours
13. Injuries should be processed using the following forms:
    a. CA-1 Federal Employee's Notice of Traumatic Injury and Claim for Continuation of Pay/Compensation
    b. CA-16 Authorization for medical examination and/or treatment
    c. CA-20 Attending Physicians Report

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